

EXAMINING DRUG-IMPAIRED DRIVING

HEARING

BEFORE THE

SUBCOMMITTEE ON DIGITAL COMMERCE AND
CONSUMER PROTECTION

OF THE

COMMITTEE ON ENERGY AND
COMMERCE

HOUSE OF REPRESENTATIVES

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EXAMINING DRUG-IMPAIRED DRIVING

WEDNESDAY, JULY 11, 2018

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON DIGITAL COMMERCE AND CONSUMER
PROTECTION,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 1:02 p.m., in room 2123, Rayburn House Office Building, Hon. Robert Latta (chairman of the subcommittee) presiding.

Present: Representatives Latta, Kinzinger, Lance, Guthrie, Bilirakis, Bucshon, Mullin, Walters, Costello, Walden (ex officio), Schakowsky, Dingell, Welch, Kennedy, and Pallone (ex officio).

Staff Present: Melissa Froelich, Chief Counsel, Digital Commerce and Consumer Protection; Ali Fulling, Legislative Clerk, Oversight and Investigations/Digital Commerce and Consumer Protection; Elena Hernandez, Press Secretary; Paul Jackson, Professional Staff, Digital Commerce and Consumer Protection; Bijan Koohmaraie, Counsel, Digital Commerce and Consumer Protection; Drew McDowell, Executive Assistant; Greg Zerzan, Counsel, Digital Commerce and Consumer Protection; Michelle Ash, Minority Chief Counsel, Digital Commerce and Consumer Protection; Jeff Carroll, Minority Staff Director; Evan Gilbert, Minority Press Assistant; Lisa Goldman, Minority Counsel; and Caroline Paris-Behr, Minority Policy Analyst.

OPENING STATEMENT OF HON. ROBERT E. LATTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Mr. LATTA. Well, good afternoon. And I would like to call the Digital Commerce and Consumer Protection Subcommittee to order.

And before we get started, just to let our panelists know, we have had two other subcommittees running today. And so we were downstairs, but Health is still running, and we had another subcommittee in here on telecom a little bit ago. So we kind of have members here, there, and everywhere today. But I just want to let you know what is going on with the full committee and the subcommittee.

But I appreciate you all being here today. And, as I said, we will now come to order, and I will recognize myself for 5 minutes. And, again, good afternoon, and thank you for all appearing before us today.

“Drive sober or get pulled over.” It is a phrase that we have heard in classrooms and television and radio ads and seen bill-

boards along the highway. Everyone knows that driving while under the influence of alcohol is dangerous and unacceptable, and there are methods to identify and apprehend those who break the law.

Unfortunately, the consequence of driving under the influence of drugs has not been elevated until recently, and drugged driving presents new challenges to both law enforcement and health professionals. Amid the devastating opioid crisis and as more states legalize the use of marijuana, tackling this problem is now more important than ever.

According to the Governors Highway Safety Association, in 2016, the number of drivers who were fatally injured in accidents with drugs in their system surpassed the number of those with alcohol in their system for the first time.

As marijuana use increases in the general population, it continues to be the most common drug found in fatally injured drivers. Marijuana has been proven to increase drowsiness and decrease reaction speed, both of which limit a person's ability to drive safely.

Twenty percent of drivers killed in crashes in 2016 tested positive for opioids. Part of this can be tied to addiction and negligence, but legally prescribed opioids also play a role. When a patient is prescribed an opioid for pain relief, they may not understand the possible side effects. It is important that physicians and pharmacists draw attention to the warning labels and give consumers the information they need to take their medication safely.

Driving while impaired is illegal in all 50 states, but there is no definition of drug impairment, and testing practices vary from state to state. Unlike with alcohol, there is no widely used drug field test comparable to a breathalyzer. Instead, most officers learn how to recognize signs of drug impairment, including drivers' verbal and physical responses to questions and instructions. Teaching these methods has been a challenge, and the lack of data on drugged driving only exacerbates this challenge.

New methods for roadside drug testing are being developed and deployed in several states, including saliva tests. At their summit in March, NHTSA committed to examining the operation of these tests and improving the data the government has about drugged-driving-related fatalities. Understanding the problem is an important first step to fixing it.

Today, we are here to discuss what local, state, and Federal efforts are being made to combat this issue and what else needs to be done. Public education is an essential component of fighting drugged driving. We believe that, with improvements in awareness, the dangers of drugged driving will be as well understood as drunk driving. Additionally, we believe our witnesses can detail what Congress can consider to help stop this dangerous trend.

Almost 1 year ago, this committee unanimously passed the SELF DRIVE Act. Getting safe self-driving cars on the road would prevent the senseless deaths of thousands of Americans on roadways every year. Until that day comes, we need to all do all we can to raise awareness of the dangers of impaired driving.

More recently, this committee developed a package of over 50 bills, including my legislation, the INFO Act, to address the opioid

crisis. These bills were included in the bipartisan House-passed opioids package.

My bill creates a public dashboard consisting of comprehensive information and data on nationwide efforts to combat the opioid crisis. Establishing a one-stop shop makes it easier for individuals to access and analyze data that could lead to real solutions that save lives.

We are committed to the communities and families confronting this challenge on a daily basis and will continue investigating key areas that contribute to the crisis. I want to thank you all again for being with us today.

And, at this time, I yield back the balance of my time, and I would like to recognize the gentlelady from Illinois, the ranking member of the subcommittee, for 5 minutes.

[The prepared statement of Mr. Latta follows:]

PREPARED STATEMENT OF HON. ROBERT E. LATTA

Good morning and thank you to all our witnesses for appearing today. "Drive sober or get pulled over." It's a phrase that we have heard in classrooms and television and radio ads, and seen on billboards along the highway. Everyone knows driving while under the influence of alcohol is dangerous and unacceptable, and there are methods to identify and apprehend those who break the law. Unfortunately, the consequences of driving under the influence of drugs has not been elevated until recently, and drugged driving presents new challenges to both law enforcement and health professionals.

Amid the devastating opioid crisis, and as more states legalize the use of marijuana, tackling this problem is now more important than ever. According to the Governors Highway Safety Association, in 2016 the number of drivers who were fatally injured in accidents with drugs in their system surpassed the number of those with alcohol in their system for the first time.

As marijuana use increases in the general population, it continues to be the most common drug found in fatally injured drivers. Marijuana has been proven to increase drowsiness and decrease reaction speed, both of which limit people's ability to drive safely.

Twenty percent of drivers killed in crashes in 2016 tested positive for opioids. Part of this can be tied to addiction and negligence, but legally prescribed opioids also play a role. When a patient is prescribed an opioid for pain relief, they may not understand the possible effects. It is important that physicians and pharmacists draw attention to the warning labels and give consumers the information they need to take their medication safely.

Driving while impaired is illegal in all 50 states, but there is no set definition of drug impairment and testing practices vary from state to state. Unlike with alcohol, there is no widely used drug field test comparable to a breathalyzer. Instead, most officers learn how to recognize signs of drug impairment, including driver's verbal and physical responses to questions and instructions. Teaching these methods have been a challenge, and the lack of data on drugged driving only exacerbates that challenge.

New methods for roadside drug testing are also being developed and deployed in several states, including saliva tests. At their summit in March, NHTSA committed to examining the operation of these tests, and improving the data the government has about drugged-driving related fatalities. Understanding the problem is an important first step to fixing it.

Today, we're here to discuss what local, state, and Federal efforts are being made to combat this issue, and what else needs to be done. Public education is an essential component of fighting drugged driving. We believe that with improvements in awareness, the dangers of drugged driving will be as well-understood as drunk driving. Additionally, we believe our witnesses can detail what Congress can consider to help stop this dangerous trend.

Almost 1 year ago, this Committee unanimously passed the SELF DRIVE Act. Getting safe, self-driving cars on the road would prevent the senseless deaths of thousands of Americans on our roadways every year. Until that day comes, we need to do all we can to raise awareness of the dangers of impaired driving.

More recently, this committee developed a package of over 50 bills, including my legislation, the INFO Act, to address the opioids crisis. These bills were included in the bipartisan House-passed opioids package. My bill creates a public dashboard consisting of comprehensive information and data on nationwide efforts to combat the opioid crisis. Establishing a one-stop-shop makes it easier for individuals to access and analyze data that could lead to real solutions and save lives. We are committed to the communities and families confronting this challenge on a daily basis and will continue investigating key areas that contribute to the crisis.

Thank you again for being here and I look forward to your testimony. I yield to Ranking Member, the gentlelady from Illinois, Ms. Schakowsky, for 5 minutes.

**OPENING STATEMENT OF HON. JANICE D. SCHAKOWSKY, A
REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLI-
NOIS**

Ms. SCHAKOWSKY. Thank you, Mr. Chairman.

I am happy that we are holding this hearing today on drugged driving. Today's hearing really comes down to one question: What is NHTSA doing in order to combat all impaired driving?

"Impaired driving" is a term used to describe driving while affected by alcohol or legal or illegal drugs. Impaired driving risks the lives not only of the impaired driver but everyone else as well. Everyone else is on the road. And those substances have no place in our society. It is illegal in every state.

The Foundation for Advancing Alcohol Responsibility funded a report in 2015 that found that drugs were found in the system of 43 percent of fatally injured drivers among those who were tested. While this statistic of course raises concern, I have questions and concerns about the methodology and accuracy of the statement and share many of the safety advocates' concerns that this could divert attention and resources from efforts to curb drunk driving.

Alcohol continues to cause more deaths than drugs. In 2016, according to a report from January of this year issued by the National Academies, more than 10,000 people were killed in crashes involving a drunk driver.

This issue is a complicated one because there are hundreds of drugs, whether they be prescription, over-the-counter, or illegal, that can and do impair driving. Complicating matters further, drugs of all kinds affect individuals differently. And data on drug presence, like put forth by the Foundation for Advancing Alcohol Responsibility, is often misleading.

Further complicating matters, there is no national accepted method for testing the drug impairment of a driver. Positive drug tests do not necessarily yield accurate results, as trace amounts of many drugs can linger in a person's system for weeks, meaning that the driver may not necessarily be impaired, even when testing positive for some drugs.

The National Highway Transportation Safety Administration, NHTSA, conducted a study in 2016 that found "alcohol was the largest contributor to crash risks," and that "there was no indication that any drug significantly contributed to crash risks." And yet, in 2018, NHTSA launched a National Drug-Impaired Driving Initiative, and, in March, NHTSA held a Drug-Impaired Driving Summit to engage on this issue.

In Carol Stream, Illinois, local law enforcement is experimenting with a new swab test in order to test for a number of drugs, includ-

ing marijuana, cocaine, amphetamines, methamphetamines, and opioids like heroin. The potential for such a test is undoubtedly promising, but I would urge caution, as such a test is unlikely to be admissible in court for some time. And, again, this may take precious resources away from preventing drunk driving.

On the Federal level, I hope that NHTSA is working with state and local enforcement and transportation agencies to ensure that they are widely deploying resources to protect public safety. If NHTSA is going to prioritize drugged-driving enforcement and prevention and turns attention away from other risks, it is critical to ensure that we have accurate data to suggest that shifting their focus away is justified and, importantly, must ensure that they have accurate testing to ensure enforcement action is effective and accurate.

I also hope that NHTSA continues to fulfill its mission of reducing death, injuries, and economic losses from motor vehicle crashes; that it works with other agencies to ensure that substance abuse treatment is also available for those who suffer from addiction. We, as a society and as Federal Representatives, must take a whole approach to curbing drunk and drugged driving, and that must include treating the underlying causes.

I am trying to look at time. What do I have left? Twenty-two seconds. Let me see.

I don't want to leave the impression that I don't think drugged driving is a problem. I do. And I think we need to do everything we can to make sure that we have the proper data to justify its importance. We do know about drunk driving, and we want to make sure that that effort to stop it continues.

And I yield back.

Mr. LATTA. Thank you.

The gentlelady yield back, and the chair now recognizes the gentleman from Oregon, the chairman of the full committee, for 5 minutes.

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. Thank you, Mr. Chairman.

Good afternoon, and I want to thank our witnesses for participating in today's hearing. We value your testimony.

Sadly, we have all known too many lives cut short because of the reckless decision of some to get behind the wheel when impaired. About 1 in 4 traffic fatalities each year—that is roughly 10,000 lives lost—involves an alcohol-impaired driver.

Now, part of the problem for those trying to detect and prevent drug-impaired driving is the lack of statistics available. Even with all the advances in vehicle safety and crash avoidance systems in recent years, they are not enough to stop the fatal consequences of driving while impaired, whether by alcohol, marijuana, opioids, or a deadly combination. It is a real issue in Oregon, both for employers and others, is trying to find something that detects appropriately marijuana consumption in those who are at work or on the road.

According to one recent study by the Governors Highway Safety Association, in 2016, about 20 percent of fatally injured drivers

who had drugs in their system tested positive for opioids, 20 percent, compared to 17 percent in 2006. So we are seeing an upward trend here in the presence of opioids and fatally injured drivers on the rise over the last 10 years.

The Energy and Commerce Committee is all too familiar with the lethal effects of the opioid crisis, and drug-impaired driving is yet another fact of combating this national scourge.

More than 50 bills from this committee were included in H.R. 6—that is the SUPPORT for Patients and Communities Act—to address various aspects of this crisis, including prevention, treatment, and support for both those battling addiction as well as their families.

This is a crisis we have been working to combat over multiple Congresses in a bipartisan way, and we will continue in our efforts to legislate and evaluate and legislate as we go forward.

Drug-impaired driving creates unique challenges for law enforcement. Whereas nearly every law enforcement agency in America has the resources to test for driving under the influence of alcohol, similar resources are often lacking when it comes to illegal narcotics. The lack of scientifically confirmable evidence of drug-impaired driving can make it difficult for law enforcement officers and prosecutors to keep impaired drivers off our roads.

However, statistics provided by the National Highway Traffic Safety Administration make it clear this danger is on the rise.

So I look forward to the testimony you are going to give to the committee and your answers to our questions. You are on the front lines in this battle, and I know you have the expertise to help us understand how better to deal with it.

I also want to mention that this month marks the 1-year anniversary of when this committee unanimously passed the SELF DRIVE Act. I know Ms. Schakowsky played a huge role in that, and Mr. Pallone and others on the committee. It is a national Federal framework to ensure safe and innovative testing, development, and deployment of self-driving cars. Getting safe self-driving cars on the road would go a long way to preventing a lot of highway fatalities, the more than 100 Americans who die every day behind the wheel.

But we are waiting for the Senate. So, we need them to act. Then we can get a bill down to the President's desk and America can lead in the effort on creating self-driving vehicles and safer highways.

So, Mr. Chairman, thanks for your great leadership on that effort, as well, and Ms. Dingell and others who have put so much time and energy into our SELF DRIVE Act. We need to pull out all the stops to find agreement, get the Senate to move, get agreement, get that down to the President.

So, with that, Mr. Chairman, I yield back.

[The prepared statement of Mr. Walden follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

Good morning and thank you to our witnesses for appearing before us today to participate in our hearing on drug-impaired driving.

Sadly, we have all known too many lives cut short because of the reckless decision of some to get behind the wheel impaired. About 1 in 4 traffic fatalities each year,

that's roughly 10,000 lives lost, involves an alcohol-impaired driver. Part of the problem for those trying to detect and prevent drug-impaired driving is the lack of statistics available. Even with all of the advances in vehicle safety and crash avoidance systems in recent years, they are not enough to stop the fatal consequences of driving while impaired, whether by alcohol, marijuana, opioids, or a deadly combination.

According to one recent study by the Governors Highway Safety Association, in 2016, about 20 percent of fatally-injured drivers who had drugs in their system tested positive for opioids. Compared to 17% in 2006, we're seeing a stark trend here with the presence of opioids in fatally-injured drivers on the rise over the past decade.

The Energy and Commerce Committee is all too familiar with the lethal effects of the opioid crisis, and drug-impaired driving is yet another facet of combating this national scourge. More than 50 bills from this committee were included in H.R. 6, the SUPPORT for Patients and Communities Act to address various aspects of this crisis, including prevention, treatment, and support both for the those battling addiction, as well as their families. This is a crisis we have been working to combat over multiple Congresses, and we will continue our efforts until we stem the tide.

Drug-impaired driving creates unique challenges for law enforcement. Whereas nearly every law enforcement agency in America has the resources to test for driving under the influence of alcohol, similar resources are often lacking when it comes to illegal narcotics. The lack of scientifically confirmable evidence of drug-impaired driving can make it difficult for law enforcement officers and prosecutors to keep impaired drivers off of our roads. However, statistics provided by the National Highway Traffic Safety Administration (NHTSA) make it clear that this danger is on the rise.

Today, I look forward to hearing from you, our witnesses, about what Congress can and should be doing to help those on the front lines detect and prevent drugged driving. I know your expertise will provide this committee a better understanding of the size and scope of the problem, as well as the obstacles to better detecting impaired drivers.

I also want to mention that this month marks the 1-year anniversary of when this committee unanimously passed the SELF DRIVE Act, providing the first federal framework to ensure the safe and innovative testing, development, and deployment of self-driving cars. Getting safe self-driving cars on the road would go a long way to preventing the deaths of more than 100 Americans who die every day behind the wheel.

But until that day, we must do everything we can to prevent senseless and avoidable tragedies caused by drug-impaired driving. Thank you, and I yield back.

Mr. LATTA. Well, thank you very much.

The gentleman yields back the balance of his time. The chair now recognizes the gentleman from New Jersey, the ranking member of the full committee, for an opening statement for 5 minutes.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Mr. Chairman.

Today's hearing explores the complex topic of drugged driving. We know that driving under the influence of some drugs presents dangers to everyone on the road, and these drugs can impair judgment, slow reaction time, or distort perception. At the same time, there are many unknowns about the correlation of drugs and car crashes, and I expect we will address some of them today.

Hundreds of different drugs, including prescription, over-the-counter, and illicit drugs, can affect a person's driving. Unfortunately, the relationship between a specific drug's effect on driving ability is still not well understood. Different substances affect different people in different ways. Drugs are frequently used together. Often, illicit drugs are used in the presence of alcohol. And the

combined effects of multiple drugs on driving performance requires more consideration.

The scope of the drugged-driving problem is also unclear. Today, there is no nationally accepted method for testing whether a driver is impaired by drugs. Because trace amounts of certain drugs can linger in a person's system for weeks, a positive drug test result does not necessarily mean that the driver was impaired while driving. Moreover, the reporting of data of accidents involving drivers with drugs in their systems is inconsistent across jurisdictions, and nationwide data are incomplete.

So we should take the issue of drugged driving seriously so that we can adequately address the problem, but because we must appropriately allocate resources, our review should be of impaired driving more broadly. We should not neglect the causes of impaired driving, especially alcohol-impaired driving, which remains the leading cause of traffic fatalities.

The statistics for drunk driving are alarming. Every 2 minutes a person is injured, every 51 minutes a person is killed in a drunk driving crash. The Centers for Disease Control and Prevention reported that, in 2016, more than 10,000 people were killed in alcohol-impaired crashes. And drunk driving accounts for about 28 percent of all traffic-related deaths.

And, as reported just last week, one-third of pedestrians killed in car crashes in 2016 were found to be over the legal alcohol limit. Of course, we should not blame the victims who try to do the right thing and not get behind the wheel when they have been drinking, but perhaps policies that encourage us to stay away from our cars also should consider that more people will be walking.

While the number of deaths linked to drugged driving is less clear than other causes of impaired driving, no one should drive impaired. If you are unable to function normally or safely when operating a motor vehicle, you should not get behind the wheel. Even common over-the-counter medicines can have adverse effects on driving performance.

And recent studies show that drowsy driving can be just as dangerous as drunk driving. In fact, my home State of New Jersey has a law that prohibits driving while drowsy. Under the law, a driver who goes without sleep for more than 24 consecutive hours and causes a fatal crash can be charged with vehicular homicide and face up to 10 years in prison and a \$100,000 fine.

So impaired driving takes on many forms, but the wreckage left behind is the same. It has devastating consequences to family, friends, neighborhoods, and communities across the country. And I hope we continue to work together to fight impaired driving.

I don't know if anyone wants any of my time, but, if not, I will yield back, Mr. Chairman.

Mr. LATTA. Well, thank you very much.

The gentleman does yield back the balance of his time, and that will conclude opening statements from our members.

And, also, the chair reminds members that all of their statements will be included in the record.

Again, we want to thank our panel for being with us today to testify before the subcommittee.

Today's witnesses will have the opportunity to give a 5-minute opening statement, followed by a round of questions from the members.

Our witness panel for today's hearing will include Dr. Robert L. DuPont, the President of the Institute for Behavior and Health; Ms. Jennifer Harmon, the Assistant Director of Forensic Chemistry at Orange County Crime Lab; Ms. Colleen Sheehey-Church, the national President of Mothers Against Drunk Driving; and Ms. Erin Holmes, the Director of the traffic safety programs and technical writer at responsibility.org.

And, again, we appreciate your being here to give us your testimony.

And, Mr. DuPont, you will be recognized first, and you are recognized for 5 minutes for your opening statement. Thank you very much.

STATEMENTS OF ROBERT L. DUPONT, M.D., PRESIDENT, INSTITUTE FOR BEHAVIOR AND HEALTH; JENNIFER HARMON, ASSISTANT DIRECTOR, FORENSIC CHEMISTRY, ORANGE COUNTY CRIME LAB; COLLEEN SHEEHEY-CHURCH, NATIONAL PRESIDENT, MOTHERS AGAINST DRUNK DRIVING; AND ERIN HOLMES, DIRECTOR, TRAFFIC SAFETY PROGRAMS, TECHNICAL WRITER, FOUNDATION FOR ADVANCING ALCOHOL RESPONSIBILITY

STATEMENT OF ROBERT L. DUPONT, M.D.

Dr. DUPONT. Thank you very much, Mr. Chairman.

I am President of the Institute for Behavior and Health, a non-profit organization committed to understanding the modern drug epidemic and to develop policies to reverse that, to turn it back.

I am a graduate of the Harvard Medical School, a physician. I did my training at Harvard and also at NIH. And I have been working on the problem of drugged driving for four decades, including as the Director of the National Institute on Drug Abuse, the first Director. And I also served as the White House Drug Czar for two Presidents, Nixon and Ford, and have been active in that field all of my professional life.

Two trends I want to bring to everybody's attention in all the numbers we talk about. One is the fact that the highway deaths have gone up for the first time in a long time, and they have gone up by a significant number. That is very important to notice. The second trend is the increasing presence of drugs in drivers tested, whether in fatal crashes or in the National Roadside Survey.

I want to focus on four ideas that I hope will be useful.

The first is thinking about alcohol as a model for understanding impaired driving. This is very useful in many ways, but there is one area where it has catastrophic effects, and that is the search for a point equivalent to a .08 BAC. That will never happen with marijuana and other drugs. It cannot happen, because there is no fixed relationship between the blood level and impairment for other drugs. Alcohol is the exception, not marijuana, in this. And we are going to have exactly that problem with every single drug, and it cannot be fixed by additional research. That is number one.

Number two, the drug problem and alcohol problem are not just a drug like marijuana or alcohol, because what is dominant now is polydrug use. Many of the people who are arrested for alcohol have drugs present in them. Many of the people with drugs have alcohol. And so we are talking about a polydrug. To look at this drugged-driving problem as this drug and that drug misses what is happening to the drug epidemic in the United States. It is a polydrug epidemic.

The third point is that they are talking about metabolites that are present and misleading. Let me assure you that there are no metabolites present when the parent drug is not in the brain. If the metabolite of marijuana is in the urine, at that time THC is in the brain. The metabolites are quickly eliminated. It is the THC that stays, not the metabolite.

The fourth point is a thought experiment. We have for decades—and I was part of this—had safety-sensitive jobs be drug-tested, with a zero-tolerance standard. The prototype is commercial airline pilots. We have a zero tolerance for that because of safety.

Now, I want you to think about the question of whether it makes sense to do that. Is that a good idea or a bad idea? And the reality is the pilots are professional at their job; the people driving in the cars are amateurs. Last year, we had zero deaths from commercial airlines and we had 40,000 deaths from the highway.

Why in the world do we have a lower standard for drivers of cars than we have for pilots? And if you don't think it is needed, why don't you stop doing it for pilots? I think if you think about that a little bit, some thoughts will come clear about what is needed here.

Now, I have, quickly running along, several points to get at.

First of all, we need local and national data. The problem is deficient in having data. That is really important.

We need to test every driver arrested for impairment. And I emphasize the testing comes after the arrest for impairment, not before. In the discussion, it acts as if we are just testing all drivers. No, we are testing drivers who have been judged to be impaired for the drugs. That is really important to understand.

Third, we want to test every driver under 21, a zero tolerance for marijuana and other drug use. It is zero tolerance for alcohol under 21. You don't have to be .08 if you are under 21; any alcohol is a violation. It should be the same for marijuana. That would be a big step forward.

We need to use administrative license revocation, which has been very helpful for the alcohol area, for the drug area as well.

We need to test all drivers involved in fatalities and serious injury crashes for drugs and alcohol, not just for alcohol. And when you get one positive for alcohol, you don't stop testing, because you want to know about the drugs too. That is really important conceptually.

And because it is a polydrug problem, we need to have penalties, additional penalties, for people who have multiple drugs. It is a different situation, and it requires a different response.

NHTSA needs to organize the FARS data and publish those results annually as it now does with alcohol. It doesn't do it for

drugs. It needs to do that. And NHTSA needs to establish guidelines for what drugs to test for and what the cutoff levels are.

Finally, we need sentinel sites around the country that report on a real-time basis. I favor the shock trauma units, which are easy to get access to. And half a dozen of those around the country could give you real-time data, highly sophisticated results about traffic injuries, serious injuries, and monitor the problem on a real-time basis and not wait 5 years for the answer.

I think that the opportunity is immense right now, and this committee has a tremendously important positive role for it. I am very optimistic that we will move forward with it. But the idea that we are going to find the magic bullet that is going to solve this problem is completely wrong. And that idea that “look for the .08 equivalent for marijuana and other drugs and we will act when we get that” is completely contrary to the public interest and public safety. We need to move now. We have lots of good ideas. They need to be implemented.

And the idea that they are going to stop our interest in alcohol is completely wrong. These things go together. They are not two sides of a teeter-totter. Enhancing one enhances the other. And you see that in the behavior of what is going on. So to pose this as just—that is completely wrong.

Thank you very much.

[The prepared statement of Dr. DuPont follows:]

Prepared Testimony of Robert L. DuPont, MD
Before the House Energy and Commerce Committee's
Subcommittee on Digital Commerce and Consumer Protection Hearing
Examining Drug-Impaired Driving
July 11, 2018

Thank you for the opportunity to present my testimony today. My name is Dr. Robert L. DuPont and I am President of the Institute for Behavior and Health, a non-profit organization that develops ideas to reduce illegal drug use. Since 1980 I also have been Clinical Professor of Psychiatry at the Georgetown University School of Medicine. Previously I served as first Director of the National Institute on Drug Abuse (NIDA) and the second White House Drug Chief. My full CV is enclosed.

Drug-impaired driving is a serious and growing threat to public safety on par with the better known problem of alcohol-impaired driving.

The National Roadside Survey (NRS) first conducted in 1973 has shown impressive declines in the prevalence of alcohol among drivers over the last several decades.¹ The NRS tested oral fluid and blood of drivers for the prevalence of drugs in addition to alcohol for the first time in 2007 and found that 16.3 percent of weekend nighttime drivers in the US were positive for potentially impairing drugs. In the most recent NRS conducted in 2013-2014, 22.5 percent of drivers were drug-positive, a dramatic 38 percent increase. Moreover, drugs were found at similar rates during both weekday days and weekend nights. Tetrahydrocannabinol (THC), the

¹ Berning, A., Compton, R., & Wochinger, K. (2015, February). Results of the 2013–2014 National Roadside Survey of Alcohol and Drug Use by Drivers. *Traffic Safety Facts*, Research Note. DOT HS 812 118. Washington, DC: US Department of Transportation, National Highway Traffic Safety Administration, Office of Behavioral Research. Available: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812118-roadside_survey_2014.pdf

primary psychoactive ingredient in marijuana, or its metabolite 11-hydroxy-THC (11-OH-THC) was found among 11.7 percent of drivers during weekday days and 12.6 percent of drivers during weekend nights. Concurrent testing for alcohol showed not only lower prevalence but also variation between weekday and weekend use: alcohol use was more prevalent among drivers during weekend nights (8.3 percent) than weekday days (1.1 percent).

Among fatally injured drivers, potentially impairing drugs were found recently at much higher rates than in years past. The most recent data from the Fatality Analysis Reporting System (FARS) showed that in 2016, 43.6 percent of drivers with known drug tests results were drug-positive.² In 2006, this figure was at 27.8 percent – a remarkable 57 percent increase over the course of ten years.

My core message to you today is this: Although progress has been made in recent years on the recognition of the problem of drugged driving, the current approaches – laws, programs and public education – are grossly inadequate in the context of the national drug epidemic and the expansion of state-based legalization of marijuana.

The primary conflicts over efforts to address drugged driving center around marijuana, an impairing drug that can adversely affect the skills needed for safe driving.³ There is a natural

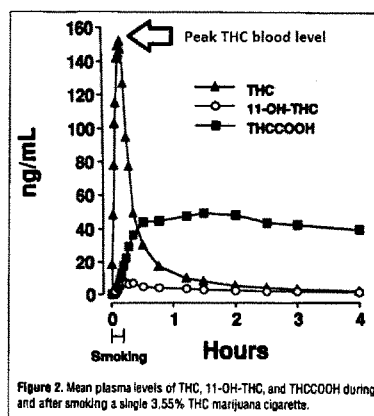
² Hedlund, J. (2018, May). *Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States*. Washington, DC: Governors Highway Safety Association. Available: <https://www.ghsa.org/resources/DUID18>

³ Examples include: Hartman, R. L., Brown, T. L., Milavetz, G., Spurgin, A., Pierce, R. S., ..., Huestis, M. A. (2015). Cannabis effects on driving lateral control with and without alcohol. *Drug and Alcohol Dependence*, 154, 25-47. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4536116/>; Lenne, M. G., Dietz, P. M., Triggs, T. J., Walmsley, S., Murphy, B., & Redman, J. R. (2010). The effects of cannabis and alcohol on simulated arterial driving: influences of driving experience and task demand. *Accident; Analysis and Prevention*, 42(3), 859-866; Hartman, R. L., & Huestis, M. A. (2013). Cannabis effects on driving skills. *Clinical Chemistry*, 59(3), 478-492. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3836260/>

instinct to manage the problem of marijuana-impaired driving in the same way as alcohol-impaired driving by identifying a scientifically valid tissue level for marijuana impairment that is analogous to the blood alcohol concentration (BAC) of 0.08 g/dL. Under such a scheme, any driver suspected of impaired driving with a specific level of THC, would be “impaired”. This proposal sounds sensible. It is impossible.

No amount of additional research can determine a tissue level associated with impairment for marijuana (or any other drug) analogous to the BAC limit.⁴ This is because alcohol is an unusual drug: it is water-soluble. That means that brain levels and impairment are closely correlated with blood levels. As intake of alcohol increases, impairment increases and blood alcohol levels increase correspondingly; likewise, as blood alcohol level decreases, impairment decreases.

Unlike alcohol, THC is not water soluble, only fat soluble, so after marijuana is smoked, THC is quickly eliminated from the blood – 90% in the first hour after smoking – and moves to fatty tissues in the body including, crucially, the brain. Almost immediately after smoking marijuana, blood levels of THC peak, then dramatically fall (see figure at right).⁵



⁴ Reisfield, G. M., Goldberger, B. A., Gold, M. S. & DuPont, R. L. (2012). The mirage of impairing drug concentration thresholds: A rationale for zero tolerance *per se* driving under the influence of drugs laws. *Journal of Analytical Toxicology*, 36(5), 353-356; Huestis, M. A. (2015). Cannabis-impaired driving: a public health and safety concern. *Clinical Chemistry*, 61(10), 1223-1225. Available: <http://clinchem.aaccjnl.org/content/61/10/1223>

⁵ Huestis, M. A., Henningfield, J. E., & Cone, E. J. (1992). Blood cannabinoids. I. Absorption of THC and formation of THC and of 11-OH-THC and THCCOOH during and after smoking marijuana. *Journal of Analytical Toxicology*, 16(5), 276-282.

Further complicating the picture is the metabolism of marijuana “edibles”. When marijuana is ingested orally as an “edible”, the THC is absorbed and sent to the liver where it is partially metabolized and then circulated to the brain and other fatty tissues. This delay in absorption and distribution to the brain means a person who eats marijuana will not be immediately impaired and likely will feel confident about driving. However, an hour later that individual behind the wheel could be severely impaired with THC blood – and brain – levels peaking up to four hours after consumption.

The contrast between metabolism of alcohol and marijuana (and other drugs) is only one of many reasons there will never be BAC equivalents for marijuana and other drugs. Other key factors include but are not limited to tolerance and drug-to-drug and drug-to-alcohol interactions.

Simultaneous use of multiple impairing drugs is deeply concerning, particularly the simultaneous use of alcohol and marijuana, which is the most common drug combination among drivers. The use by drivers of prescription drugs is an added concern for impaired driving. There is no interest in hindering medical care of patients; however, even when drivers have valid prescriptions for potentially impairing drugs, it is illegal for these individuals to drive impaired by these drugs alone or in combination with alcohol and other drugs. Nationally, half (50.5 percent) of all deceased drug-positive drivers in 2016 were positive for two or more drugs and 40.7 percent were positive for alcohol. Drug-impaired driving is by no means limited only to marijuana-impaired driving and yet the largely singular focus on marijuana and driving severely hinders progress in reducing all drug-impaired driving.

Marijuana advocates fear action on drugged driving because they fear that drivers who are not impaired will test positive for marijuana use that occurred long (weeks or months) before the test. While it is possible to detect THC in some chronic daily marijuana users following a period of sustained abstinence,⁶ many chronic marijuana users show significant psychomotor impairment three weeks after last marijuana use.⁷

Most importantly, however, drivers are asked to submit to laboratory tests for drugs *after* law enforcement officers determine they are impaired and arrest them, or alternatively, if they are involved in serious or fatal crashes and are required to submit to testing under state law. No matter the circumstances under which drug testing of drivers takes place, the testing typically occurs between 90 and 120 minutes – or longer – after driving in non-crash cases while drug testing may not occur for 2 to 4 hours in crash cases, further highlighting the need for effective action to address this public safety threat.

With this background, I present the following proposals for action to reduce drugged driving:

1. Use reliable field testing technology for every driver arrested for impaired driving to test for alcohol *and* potentially impairing drugs, including marijuana.

⁶ Bergamaschi, M., Lerschner, E. L., Goodwin, R. S., Scheidweiler, K. B., Hirvonen, J., . . . , Huestis, M. A. (2013). Impact of prolonged cannabinoid excretion in chronic daily cannabis smokers' blood on per se drugged driving laws. *Clinical Chemistry*, 59(3), 519-526. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3717350/>

⁷ Bosker, W. M., Karschner, E. L., Lee, D., Goodwin, R. S., Hirvonen, J., Innis, R. B., Theunissen, E. L., Kuypers, K. P., Huestis, M. A., & Ramaekers, J. G. (2013). Psychomotor function in chronic daily cannabis smokers during sustained abstinence. *PLoS One*, 8(1):e53127.

2. Apply to every driver under 21 years old who tests positive for any illicit or impairing drug, including marijuana and impairing prescription drugs without a valid prescription, the same zero-tolerance standard specified for alcohol, the use of which in this age group is illegal.
3. Apply to every driver found to have been impaired and positive for drugs, including marijuana, the same remedies and penalties that are specified for alcohol-impaired drivers, including administrative or judicial license revocation.
4. Apply additional penalties to impaired drivers that are positive for multiple drugs, including alcohol.
5. Require every driver involved in a crash which results in a fatality or significant injury, including injury to pedestrians, who could be charged with a moving violation to provide a sample for testing. Test those samples for alcohol and impairing drugs, including marijuana, a panel of opioids, and other prescription drugs.
6. Ask the National Highway Traffic Safety Administration (NHTSA) to report FARS drug test data annually as is presently done for alcohol. Reporting rates of drug test results to the national FARS database vary dramatically from state to state, with further variation in testing technology. Systemic changes are needed across states for improved collection among both fatally injured drivers and impaired driving suspects.

7. Develop sentinel studies of seriously injured drivers treated at half a dozen major shock trauma centers to provide near real-time data about the prevalence of drugs and alcohol in crashes that produce serious injuries. A useful model for this can be found in the well-known study of seriously injured drivers admitted to a Maryland level-1 shock-trauma center.⁸

While most laws and programs related to drugs, including alcohol, and driving are developed at the state and local level, there is a long history of federal leadership focused on reducing impaired driving including identifying best practices, piloting innovative programs and encouraging their widespread adoption. Two widely recognized examples of state-based changes directed by the federal government are increasing the minimum drinking age to 21 and setting the 0.08 BAC limit for alcohol. States were incentivized by the federal government by withholding a small portion of federal highway funds if these essential public health and safety changes were not made. It is no surprise that today all 50 states have set 21 as the legal drinking age and a BAC limit of 0.08 g/dL.

Any policy actions taken to reduce drugged driving must include the essential element of public education. The impressive strides our country has made in reducing alcohol-impaired driving have been in part because of the strong public messaging of “Don’t Drink and Drive” that has been coupled with effective enforcement. Public education efforts reinforce the laws, and the laws reinforce public education efforts. The analogous message for drugged driving that must be

⁸ Walsh, J. M., Flegel, R., Atkins, R., Cangianelli, L. A., Cooper, C., ..., & Kerns, T. J. (2005). Drug and alcohol use among drivers admitted to a Level-1 trauma center. *Accident Analysis & Prevention*, 37(5), 894–901.

conveyed in a clear and comprehensive way backed by policies and active enforcement is “Don’t Use Drugs and Drive.”

There is widespread public support for the limits set on drug use and alcohol for commercial drivers, commercial pilots, train operators and others in safety sensitive positions. That is because the public recognizes that safety is a priority for highways, trains and aircraft. It is difficult to argue that these well-established standards should not be used for every driver on the nation’s roads and highways given the life-and-death consequences of impairment. In 2017 there were zero commercial airline fatalities. That same year there over 40,000 people lost their lives on our nation’s roads and highways.

As a physician who has worked for five decades to reduce the adverse health effects of drug abuse, including alcohol- and drug-impaired driving, I call your attention to the unique role of the criminal justice system in not only reducing drug abuse but also in promoting recovery. Arrests for alcohol- and drug-impaired driving are commonly positive turning points in the lives of the people who are arrested.

As you continue to gather information about drugged driving and consider proposals for action, remember that driving on the nation’s roads and highway is a privilege, that driving impaired is illegal, and that we must protect the public from drugged drivers who put not only themselves at risk but all others on the road – drivers, passengers, cyclists and pedestrians. Again, no one wants to board a plane that is operated by an alcohol- or drug-impaired pilot. Who wants to share the road with a drug-impaired person driving a two-ton vehicle at 65 miles per hour?

Remember also that while your deliberations take place, people are dying on the nation's roads at unacceptable rates. I submit that the time for action is now.

I would like to conclude my testimony by recognizing the leadership of Heidi King, Administrator of the long-leading National Highway Traffic Safety Administration (NHTSA) who is passionately committed to reducing the threat of drug-impaired driving.

Finally, thank you for *your* leadership. This hearing is an essential public expression of the importance of the drugged driving issue and serves as a vital milestone on our nation's path to making progress in reducing this serious public safety problem.

Enclosures:

- Curriculum Vitae of Robert L. DuPont, MD
- GHSA Report *Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States*
- DUID Model Laws from Institute for Behavior and Health (IBH) and National Partnership on Alcohol Misuse and Crime (NPAMC)
- "License revocation as a tool for combatting drugged driving" by Talpins, et al., 2014
- Heritage Working Paper DUID

Recommended Websites:

- www.StopDruggedDriving.org
- www.DUIDVictimVoices.org

Testimony Summary of Robert L. DuPont, MD

- Drug-impaired driving is serious as alcohol-impaired driving.
- Marijuana use can impair driving and is the most widely identified drug among impaired drivers and fatally injured drivers.
- There will never be a 0.08 g/dL BAC equivalent for THC (marijuana) or any other drug.
- Current efforts to combat drugged driving are not enough. Seven proposals are offered:
 1. Use reliable field testing technology for every driver arrested for impaired driving to test for alcohol and impairing drugs, including marijuana.
 2. Apply to every driver under 21 years old who tests positive for any illicit or impairing drug, including marijuana and impairing prescription drugs without a valid prescription, the same zero-tolerance standard specified for alcohol, the use of which in this age group is illegal.
 3. Apply to every driver found to have been impaired and positive for drugs, including marijuana, the same remedies and penalties that are specified for alcohol-impaired drivers, including administrative or judicial license revocation.
 4. Apply additional penalties to impaired drivers that are positive for multiple drugs, including alcohol.
 5. Require every driver involved in a crash which results in a fatality or significant injury who could be charged with a moving violation to provide a sample for testing.
 6. Ask NHTSA to report FARS drug test data annually as is presently done for alcohol. Make systemic changes across states for improved collection among both fatally injured drivers and impaired driving suspects.
 7. Develop sentinel studies of seriously injured drivers treated at major shock trauma centers to provide near real-time data about the prevalence of drugs and alcohol on the nation's roads.

Mr. LATTA. Thank you very much.

And, Ms. Harmon, you are recognized for 5 minutes for your opening statement. Thank you.

STATEMENT OF JENNIFER HARMON

Ms. HARMON. Thank you. And thank you again for having us here.

Drug-impaired driving is not a new problem on our roadways. However, it is an ever-increasing one. That is certainly the case in Orange County. We are the sixth most populous county in the United States.

My name is Jennifer Harmon. I am an assistant director with the Orange County Crime Lab. We are located in Santa Ana, California. Our laboratory offers comprehensive forensic testing to the county and all law enforcement entities contained within, which is over 30 municipal, State, and Federal agencies, including the district attorney's office and the Orange County Sheriff-Coroner Division.

For over 8 years, our laboratory has worked collaboratively with law enforcement, prosecutorial, and public health partners, as well as traffic safety advocates, to better toxicological testing, research, and training on drug-impaired driving in our county and the State of California.

We utilize state-of-the-art technology, comprehensively testing apprehended DUI suspect blood samples. These are post-arrest samples. For nearly a year, we have been testing every driver, regardless of their blood alcohol level. This is a practice that has been advocated for for more than 10 years by the National Safety Council but is still not routine practice in public crime labs.

Every sample is initially analyzed for alcohol, inhalants, and seven classifications of drugs, a total of about 50 drugs currently. And we report 72 different compound blood concentrations when we test for those compounds.

Beginning in August of this year, every traffic-safety-related case, living or deceased, will be tested for over 300 drugs, to include illicit substances, prescriptions, over-the-counter medications, and new synthetic and designer drugs.

Our chemical testing methods in Orange County are a mechanism to assist in populating the scientific research and a means to collaborate with public health partners on drug-impaired-driving solutions and impacts.

As a laboratory, we test drug stability, impacts on collection methods, new technology options, including roadside saliva testing, and the correlation of drug levels on observed field impairments. Our testing schemes allow us to collect comprehensive countywide data on DUI suspects and fatally injured drivers.

Our current countywide data suggests that 45 percent of our apprehended DUI drivers test positive for at least one drug other than alcohol. Twenty-nine percent of our drivers who have blood alcohol levels greater than the per se level of a .08 are positive for at least one other drug.

Fifty-six percent of our fatally injured drivers test positive for at least one drug, nearly half of those alcohol and/or THC, the psychoactive drug found in marijuana. What is additionally alarm-

ing is that our non-alcohol-involved traffic-related cases that are drug-positive, 40 percent of them test for three or more drugs.

The success of the Orange County model over the last several years has been due to our collaborative efforts with stakeholders. We cross-train our dedicated toxicologists with traffic safety law enforcement, prosecutors, and public and private defense. Our experts attend law enforcement training and provide reciprocal training as well.

Our team routinely interacts with law enforcement certified drug recognition experts, also known as DREs, ensuring that their expertise on drug impairments, metabolism, trends, and poly-pharmacy are a marrying of field observation and scientific theory. It ensures that our law enforcement partners are able to maintain their certifications; validate their in-field, at-roadside impairment observations; and stay current on emerging drug trends.

Law enforcement and toxicology expertise is critical to successful prosecutions of the drug-impaired in Orange County, as we have a 95-plus-percent conviction rate on DUID cases that are tried. The county also houses the statewide Traffic Safety Resource Prosecutor Program, which allows for information sharing in the criminal justice system at a statewide level.

Crime labs, in general, are severely underfunded, especially in the area of forensic toxicology. Our laboratory alone in the last 8 years has seen a 60-percent increase in the number of exams conducted on our toxicology samples and an over 100-percent increase in the number of DUID cases processed, with a 25-percent reduction in staffing.

However, our county has made a conscious effort to utilize resources as efficiently as possible and ensure high-quality testing on every case, regardless of the charge or the presence of the most commonly encountered substances, like alcohol.

To understand the scope of the drug-impaired-driving problem, comprehensive testing must be obligated by all laboratories conducting toxicology and traffic safety-related cases. Orange County's overall goal has been to share information, collaboratively train all stakeholders in the traffic safety system, and to collect data for overall better outcomes and educated traffic safety policy.

Knowing the prevalence of the problem will result in better preventative health measures, safer roadways, and improved treatment for the drug-impaired. It also aids in improving forensic drug testing for all types of crimes beyond traffic safety, including drug-facilitated sexual assault, death investigation, and overdose.

For those of us who work in America's crime labs, no day passes without seeing clear evidence that confirms the fact that our nation is in the grips of a drug epidemic. As discussed in my testimony, drugs impact the safety of motorists, but, of course, the impact goes far beyond our roadways.

My colleagues and I appreciate the work Congress has done and continues to do in addressing this problem. Those of us at the local level remain committed to joining you in this worthwhile effort.

I appreciate the opportunity to share.

[The prepared statement of Ms. Harmon follows:]

Witness Testimony Summary: Jennifer Harmon

National statistics show that more than 40% of fatally-injured drivers, that were tested for drugs are positive, nearly the same as those with a positive blood alcohol level. This is certainly the case for the County of Orange, the sixth most populous county in the U.S. The Orange County Crime Laboratory offers comprehensive forensic testing to the County of Orange and all law enforcement entities contained within; over 30 municipal, regional, state, and federal agencies as well as the Orange County District Attorney's Office and the Orange County Sheriff-Coroner, Coroner Division.

For over eight years, our laboratory has worked collaboratively with law enforcement, prosecutorial, and public health partners as well as traffic safety advocates to better toxicological testing, research and training on drugged impaired driving in our county and the state of California. We utilize state of the art technology to comprehensively test apprehended DUI suspect blood samples and fatally-injured drivers, regardless of their tested blood alcohol level.

Our chemical testing methods in Orange County are a mechanism to assist in populating the scientific research and means to collaborate with public health partners on drug impaired driving impacts and solutions. Our testing schemes allow us to collect comprehensive county-wide data on DUI suspects and fatally-injured drivers. To understand the scope of the drug impaired driving problem, comprehensive testing must be obligated by all laboratories conducting toxicology in traffic safety related cases. Orange County's overall goal has been to share information, collaboratively train all stakeholders in the traffic safety system, and to collect data for overall better outcomes and educated traffic safety policy.

Witness Testimony: Jennifer Harmon

Drug impaired driving is not a new problem on our roadways however it is an ever-increasing one. National statistics show that more than 40% of fatally-injured drivers, that were tested for drugs are positive, nearly the same as those with a positive blood alcohol level. This is certainly the case for the County of Orange, the sixth most populous county in the U.S. My name is Jennifer Harmon and I am an Assistant Director with the Orange County Crime Laboratory located in Santa Ana, California. Our laboratory offers comprehensive forensic testing to the County of Orange and all law enforcement entities contained within; over 30 municipal, regional, state, and federal agencies as well as the Orange County District Attorney's Office and the Orange County Sheriff-Coroner, Coroner Division.

For over 8 years, our laboratory has worked collaboratively with law enforcement, prosecutorial, and public health partners as well as traffic safety advocates to better toxicological testing, research and training on drugged impaired driving in our county and the state of California. We utilize state of the art technology to comprehensively test apprehended DUI suspect blood samples. For nearly a year we have been testing every driver regardless of their blood alcohol level. This is a practice that has been advocated for by the National Safety Council for over 10 years but is still not routine in many public crime labs. Every sample is initially analyzed for alcohol, inhalants, and 7 classifications of drugs, 50 drugs in total. We currently report blood drug concentrations for 72 different compounds. Beginning in August, every traffic safety related case, living or deceased, will be tested for over 300 drugs to include illicit

substances, prescriptions, over the counter medications and new synthetic and designer drugs.

Our chemical testing methods in Orange County are a mechanism to assist in populating the scientific research and means to collaborate with public health partners on drug impaired driving impacts and solutions. As a laboratory we study drug stability, impacts of collection methods, new technology options, including roadside saliva testing, and the correlation of drug levels on field observed impairments. Our testing schemes allow us to collect comprehensive county-wide data on DUI suspects and fatally-injured drivers. Our current county-wide data suggests that 45% of our apprehended DUI drivers test positive for at least one drug other than alcohol and 29% of drivers with blood alcohol levels greater than the legal per se of 0.08% (w/v) are positive for at least one additional drug. 56% of our fatally-injured drivers test positive for at least one drug, nearly half of those include alcohol and, or delta-9-tetrahydrocannabinol, THC, the psychoactive drug found in marijuana. What is additionally alarming is that of our non-alcohol involved traffic related cases that are drug positive, 40% have three or more drugs in their system.

The success of the Orange County model over the last several years has been due to our collaborative efforts with stakeholders. We cross-train our dedicated DUID (driving under the influence of drugs) expert toxicologists with traffic safety law enforcement, prosecutors, and public and private defense counsel. Our experts attend law enforcement training and provide reciprocal training as well. Our team routinely interacts with law enforcements' certified Drug Recognition Experts (DRE) ensuring that their expertise on drug impairments, metabolism, trends, and poly-pharmacy are a

marrying of field observation and scientific theory. It ensures that our law enforcement partners are able to maintain their certifications, validate their in-field, at roadside impairment observations and stay current on emerging drug trends. Law enforcement and toxicology expertise is critical to successful prosecutions of the drug-impaired as Orange County has a 95+% conviction rate on DUID cases. The County also houses the statewide Traffic Safety Resource Prosecutor program (TSRP) which allows for sharing of information at a statewide level.

Crime labs, in general, are severely under-funded especially in the area of forensic toxicology. Our laboratory alone, in the last 8 years, has seen a 60% increase in the number of exams conducted on our toxicology samples, an over 100% increase in the number of DUID cases processed, and a 25% reduction in staffing. However, our county has made a conscience effort to utilize resources as efficiently as possible and ensure high quality testing on every case regardless of the charge or presence of the most commonly encountered substances like alcohol.

To understand the scope of the drug impaired driving problem, comprehensive testing must be obligated by all laboratories conducting toxicology in traffic safety related cases. Orange County's overall goal has been to share information, collaboratively train all stakeholders in the traffic safety system, and to collect data for overall better outcomes and educated traffic safety policy. Knowing the prevalence of the problem will result in better preventative health measures, safer roadways, and improved treatment for the drug-impaired. It also aids in improving forensic drug testing for all types of crime beyond traffic safety including drug-facilitated sexual assault, death investigation and overdose.

For those of us who work in America's crime labs, no day passes without seeing clear evidence that confirms the fact that our nation is in the grips of a drug epidemic. As discussed in my testimony, drugs impact the safety of motorists, but of course the impact goes far beyond our roadways. My colleagues and I appreciate the work Congress has done and continues to do in addressing this problem. Those of us at the local level remain committed to joining you in this worthwhile effort. Thank you for the opportunity to share my perspective on this important topic.

Mr. LATTA. Well, thank you very much for your testimony.
And, Ms. Sheehey-Church, you are recognized for 5 minutes.

STATEMENT OF COLLEEN SHEEHEY-CHURCH

Ms. SHEEHEY-CHURCH. Thank you so much.

Chairman Latta, Ranking Member Schakowsky, and the members of the subcommittee, I want to thank you for the opportunity to testify today before your subcommittee on the issue of drug-impaired driving.

My name is Colleen Sheehey-Church, and I serve as the national president of Mothers Against Drunk Driving, or MADD. Drugged driving is a serious issue and one that is gaining attention across our country. I look forward to sharing with the committee MADD's thoughts on how best to address this problem.

I am uniquely qualified to testify today. My son, Dustin Church, was killed by a drunk and drugged driver on July 10, 2004. At only 18 years old, Dustin had graduated from high school and had his whole life ahead of him. That night in July, Dustin had not been drinking. He was doing what most kids like to do and he was hanging out with friends when they decided to go grab a pizza.

My husband, Skip, and I had told both of our sons about not drinking until age 21 and never drinking and driving. We also talked to them about the dangers of riding in a car with a drunk driver. I will never know why Dustin got into that car that night, but I am sure, because tests showed, that he was sober and had buckled his seatbelt.

Unfortunately, the driver had been drinking and had illicit drugs in her system. That pizza run turned tragic when the driver lost control of her car, careened off the road, went over a cliff and into a river. The driver and passenger escaped, but not Dustin.

Early in the morning, Skip and I got that knock on the door that no parent should ever receive. The pain of losing someone so senselessly to a preventable crime never goes away. That is why we must work harder than ever to eliminate drunk and drugged driving.

In 2015, MADD updated our mission statement to include "help fight drugged driving." We want victims of drugged driving to know that we are here to serve their needs. We also know that the legalization of recreational and medicinal marijuana, the national opioid crisis, and the prevalence of prescription drugs in our society can only lead to more drug-impaired driving on our roadways.

What we don't know, however, is the role of drugs as causal factors in traffic crashes. This is why more research is needed. MADD is committed to a research- and data-driven agenda.

I would like to call your attention to a report released earlier this year from the National Academy of Sciences which states that alcohol-impaired driving remains the deadliest and costliest danger on the U.S. roads today. Every day in the United States, 29 people die in an alcohol-impaired-driving crash—1 death every 49 minutes—making it a persistent public health and safety problem.

The Insurance Institute for Highway Safety, also known as IIHS, reports that, out of all drugs, alcohol is the biggest threat on the roads. IIHS states that the battle against alcohol-impaired driving is not won and that states and localities should keep channeling re-

sources into proven countermeasures to deter impaired driving, such as sobriety checkpoints.

The NAS and IIHS reports are important because recent headlines would lead you to believe that drug-impaired driving has overtaken drunk driving in terms of highway deaths. That is simply not true. The truth is that we do not know how many people are killed each year due to drug-impaired driving.

There are two major obstacles to determining the scope of the problem. First, we lack impairment standards for drugs. According to the 2013–2014 National Roadside Survey, marijuana is the second most commonly found impairing drug after alcohol. Yet marijuana has no impairment equivalent to a .08 for alcohol. For prescription drugs, there are also no impairment levels for drugs legally prescribed by one doctor.

With alcohol impairment, we know what works. MADD's Campaign to Eliminate Drunk Driving in 2006 has created a national blueprint to eliminate drunk driving in our country. The campaign is based on proven strategy and supports law enforcement, all-offender ignition lock laws, advanced vehicle technology, and asks the public to help us support these initiatives. Congress has fully endorsed the campaign by funding its initiatives as part of both MAP–21 and the FAST Act.

Mr. Chairman, MADD believes that the best way to move forward on drug-impaired driving is to do more work on drunk driving. MADD has long supported our heroes in law enforcement because we know that they are the men and women who actually get drunk and drugged drivers off the roads. Law enforcement is under enormous pressure, and nationwide arrests are down. This is a trend and must be reversed. And this is an area we encourage this committee to further explore. We must encourage law enforcement agencies all across the country to make traffic enforcement a priority. Sobriety checkpoints and saturation patrols catch and deter drunk and drugged driving.

We also support proper training for law enforcement which helps them detect drugged drivers. Every law enforcement officer should receive the Standard Field Sobriety Testing Training. We also believe Advanced Roadside Impaired Driving Enforcement, ARIDE, training and the DRE, drug recognition expert, are important for law enforcement to be able to make drugged-driving arrests.

In the mid to long term, we need to focus on further research and data to understand the scope of the drugged-driving problem. One important piece of research that we urge Congress to reinstate and fully fund is the National Roadside Survey. This study is conducted roughly every 10 years, and the last Roadside Survey was last conducted 2013-2014. It is a critical tool that gives policymakers like yourselves important information about drivers who are using alcohol and then driving on the roadways.

With the prevalence of marijuana legalization, both recreational and medicinal, it is critical that more work be done to understand impairment. We agree with the recent AAA study which states a .08 equivalent may not be possible with marijuana, but we still must better understand how marijuana impairment influences driving behaviors.

In closing, I encourage the Congress to look at near-term solutions to stop recent increases in traffic fatalities. The National Academy of Sciences report made clear that alcohol is the leading killer on the roadways. Therefore, drunk driving should be a major focus in crash prevention. The good news is that doing more to prevent drunk driving will result in fewer drugged-driving deaths too.

Law enforcement is the best defense against drugged and drunk drivers. We urge the committee to work with law enforcement leaders to make sure that traffic enforcement is a priority.

And, finally, it is critical that we have the research and data to better understand this problem, to include impairment.

Mr. Chairman, I am here because of my son, Dustin. He was killed by a drunk and drugged driver. It is my hope that the recommendations I am making on behalf of MADD will help to make progress on drunk driving and drugged driving and prevent others from the same tragedy that has devastated my family.

Thank you again for the testimony.

[The prepared statement of Ms. Sheehey-Church follows:]

**Testimony of Colleen Sheehey-Church
National President, Mothers Against Drunk Driving
House Energy and Commerce Committee
Subcommittee on Digital Commerce and Consumer Protection
July 11, 2018**

Chairman Latta, Ranking Member Schakowski, and members of the subcommittee: Thank you for the opportunity to testify today before your subcommittee on the issue of drug impaired driving. My name is Colleen Sheehey-Church and I serve as the National President of Mothers Against Drunk Driving, or MADD. Drugged driving is a serious issue and one that is gaining attention across the country. I look forward to sharing with the committee MADD's thoughts on how to best address this problem.

I am uniquely qualified to testify today. My son Dustin Church was killed by a drunk and drugged driver on July 10, 2004. At only 18 years old, Dustin had just graduated from high school and had his whole life ahead of him.

That night in July, Dustin had not been drinking. He was doing what most kids like to do and was hanging out with friends when they decided to go grab a pizza. My husband Skip and I had talked to both of our sons about not drinking until age 21 and never drinking and driving. We also talked to them about the dangers of riding in a car with a drunk driver. I'll never know why Dustin got into the car that night, but I am sure and tests showed that he was sober and had buckled his seat belt. Unfortunately the driver, his friend, had been drinking and had illicit drugs in her system.

The pizza run turned tragic when the driver lost control of her car and it careened off the road into a river. The driver and passenger escaped, but not my Dustin.

Early the next morning, Skip and I got that knock on the door that no parent should ever receive. The pain of losing someone so senselessly to a 100 percent preventable crime never goes away. That's why we must work harder than ever to eliminate drunk and drugged driving.

In 2015, MADD updated our mission statement to include "help fight drugged driving." As one of the largest victim's assistance organizations in the country, we want victims of drugged driving to know that we are here to serve their needs. We also know that the legalization of recreational and medicinal marijuana, the national opioid crisis, and the prevalence of prescription drugs in our society can only lead to more drug impaired driving on our roadways. What we don't know, however, is the role of drugs as causal factors in traffic crashes. This is why more research is needed.

MADD relies on research and data to make informed public policy recommendations. Since our founding in 1980, we have led the way on every major drunk driving reform in our nation. The 21 minimum drinking age, zero tolerance laws, and the national .08 BAC standard are just a few of the major policy initiatives MADD has championed to help cut drunk driving deaths in half since 1980.

MADD is committed to a research and data driven agenda. I would like to call your attention to a report released earlier this year from the National Academy of Sciences (NAS) which states "Alcohol-impaired driving remains the deadliest and costliest danger on U.S. roads today. Every

day in the United States, 29 people die in an alcohol-impaired driving crash—one death every 49 minutes—making it a persistent public health and safety problem.”

The Insurance Institute for Highway Safety (IIHS) reports that “Out of all drugs, alcohol is still the biggest threat on the roads (IIHS Status Report, June 22, 2017). IIHS states that “the battle against alcohol-impaired driving isn’t won” and that “states and localities should keep channeling resources into proven countermeasures to deter impaired driving such as sobriety checkpoints.”

The NAS and IIHS reports are important because recent headlines would lead you to believe that drug impaired driving has overtaken drunk driving in terms of highway deaths. This is not true.

The truth is that we do not know how many people are killed each year due to drug impaired driving. There are two major obstacles to determining the scope of the problem. First, we lack impairment standards for drugs. According to the 2013-2014 National Roadside Survey, marijuana is the second most commonly found impairing drug after alcohol. Yet marijuana has no impairment equivalent to .08 for alcohol. For prescription drugs, there also are no impairment levels for drugs legally prescribed by ones doctor.

In addition to impairment, most states and localities do not have standard testing to determine if drivers involved in fatal crashes were impaired by drugs. This means we do not have a good estimate on how many people are actually killed by drug impaired drivers.

There is a key difference between ‘drug presence’ and ‘drug impairment.’ MADD believes that drug presence is sometimes being used as a way to suggest drug impairment – when this is not the case. Imagine if “alcohol presence” implied “alcohol impairment.” Currently it is possible to ascertain whether a drug is present in a driver’s system, but showing the role of drugs as causal factors in crashes has not yet been achieved.

Other than alcohol, marijuana is the drug that is most frequently detected in drivers’ systems after a vehicle crash. The National Highway Traffic Safety Administration’s (NHTSA) website currently states that “it is still unclear the extent to which [marijuana] contributes to the occurrence of vehicle crashes. Some studies have attempted to estimate the risk of driving after marijuana use, but these remain inconclusive in terms of predicting real-world crash risk.” (NHTSA website, July 2018)

MADD firmly stands behind the need to conduct robust research to determine drug impairment, and efforts to educate the public on the dangers of impaired driving.

The Campaign to Eliminate Drunk Driving

With alcohol impairment, we know what works. MADD’s Campaign to Eliminate Drunk Driving began in 2006 and has created a national blueprint to eliminate drunk driving in our country. The Campaign is based on a proven strategy and supports law enforcement, all offender ignition interlock laws, advanced vehicle technology, and asks the public to help us support these

initiatives. Congress has fully endorsed the Campaign by funding its initiatives as part of both MAP-21 and the FAST Act.

Since 2006, MADD has successfully advocated in 32 states plus the District of Columbia for all offender ignition interlock laws. The Centers for Disease Control and Prevention has compiled over 15 peer-reviewed studies that show interlocks reduce DUI recidivism, and several recent national studies show that all-offender interlock laws reduce drunk driving deaths. Thanks to these state laws, over 176 million Americans are protected by all-offender ignition interlock laws.

Congress has continued to fund twice annual high visibility law enforcement campaigns, now known as *Drive Sober or Get Pulled Over*. NHTSA estimates that states which conduct sobriety checkpoints in conjunction with high visibility advertisements have an almost 20 percent reduction in DUI deaths.

Finally, Congress authorized and funded the Driver Alcohol Detection System for Safety program, or DADSS. DADSS is a public-private partnership that seeks to create a passive, reliable, relatively inexpensive and publicly-accepted in-vehicle alcohol detection technology that would prevent a drunk driver from driving a vehicle. IIHS estimates that DADSS has the potential to save 7,000 lives a year.

The concept for DADSS emerged from a 2006 MADD conference in New Mexico, and work began in 2008 with equal support from NHTSA and auto manufacturers. Since that time,

technology development has advanced and a limited on-road test program is in place. The bulk of the program funding now comes from government sources.

Needless to say, as an organization that represents the victims of drunk driving, we are impatient to see successful completion of this program. In this regard, we support the language in the June 12, 2018 House Report 115-750 from the Committee on Appropriations, which states that "The Committee encourages NHTSA and its program partners to work diligently toward making the technology ready for vehicle integration by the end of the FAST Act authorization in fiscal year 2020." We have great faith and confidence that our friends in the auto industry recognize the value of this program and the need to make it available to their customers as soon as possible to help save many thousands of lives.

Recommendations to Move Forward

Mr. Chairman, MADD believes that the best way to move forward on drug impaired driving is to do more on drunk driving, and specifically to increase impaired driving enforcement. MADD has long supported our heroes in law enforcement because we know that they are the men and women who actually get drunk and drugged drivers off the roads. Law enforcement is under enormous pressure and nationwide arrests are down. This is a trend that must be reversed and this is an area we encourage this committee to further explore.

We must encourage law enforcement agencies all across the country to make traffic enforcement a priority. Sobriety checkpoints and saturation patrols catch and deter drunk and drugged drivers.

We also support proper training for law enforcement that helps them detect drugged drivers. Every law enforcement officer should receive Standardized Field Sobriety Testing (SFST) training. This is the basic roadside test that police use to help determine impairment. Next, the Advanced Roadside Impaired Driving Enforcement (ARIDE) training provides an additional level of training to help detect drug impairment. Finally, we support the Drug Recognition Expert (DRE) program which is an intensive training course that gives officers the knowledge to identify drug impairment more definitively and provide expert testimony in a court of law.

In addition to law enforcement training, prosecutors need to know best practices to obtain drugged driving convictions. We support the Traffic Safety Resource Prosecutors (TSRP) who help train prosecutors in order to get drunk and drugged driving convictions.

Research and Data

In the short term, our focus must be on providing law enforcement with the necessary resources to get drunk and drugged drivers off the road. In the mid to long term, we need to focus on conducting further research and improving data to understand the scope of the drugged driving problem and measure the level of impairment associated with different amounts of drugs.

One important piece of research that we urge Congress to reinstate and fully fund is the National Roadside Survey (NRS) which has been conducted for the last 45 years by NHTSA and/or the IIHS. The National Institutes of Health also supported the last two NRS surveys. This study is conducted roughly every ten years and the last roadside survey was conducted in 2013-2014. This is not a sobriety checkpoint. Drivers are paid to voluntarily participate. If they are found to be impaired, as participants of the survey they are not arrested but rather safety escorted home. This is a critical tool that gives policy makers important information about drivers who are using alcohol and drugs and then driving on our roadways.

The NRS is critical to the highway safety community as we try to better understand drunk and drug impaired driving. In fact, it is one of the few data points available to give us a sense of what is really happening on the roads in terms of presence. The 2013-2014 NRS found that there has been a large decrease in the percentage of drivers who were alcohol positive, from 35.9 percent in 1973 to 8.3 percent in 2013–2014. For BrACs of .08 and higher, there was a decrease from 7.5 percent in 1973 to 1.5 percent in 2013–2014, revealing an impressive 80 percent reduction in the percentage of alcohol-impaired drivers on the road on weekend nights.

In contrast, THC was the most widely found drug and the prevalence increased from 8.6 percent in 2007 to 12.6 percent in 2014. This can be attributed to the widely changing landscape of marijuana legalization and medical marijuana legalization. It should be emphasized that the survey identifies only the presence of drugs and not impairment.

Congress has prohibited funding for the NRS as part of the annual appropriations process. We have been told that this is due to privacy concerns. These concerns are unfounded as again the survey is completely voluntary and the data is entirely anonymous.

The information from the roadside survey is critical to tracking the prevalence of drug presence among drivers, and we urge the committee to work with your colleagues to restore funding for the NRS.

With the prevalence of marijuana legalization, both recreational and medicinal, it is critical that more work be done to understand impairment. We agree with a recent AAA study which states a .08 equivalent may not be possible with marijuana, but we still must better understand how marijuana impairment influences driving behaviors. For example, how long should someone wait after using marijuana before driving? And how does this vary between edibles and smoking? We need answers to these questions in order to make good policy.

In addition to impairment, we encourage more testing to determine the presence and amounts of drugs among drivers in crashes. Most states and localities do not have standard testing to determine if drivers involved in fatal crashes were impaired by drugs. This means we do not have a good estimate on how many deaths occur in crashes of drivers with drugs in their systems or who are impaired.

Closing

In closing, I encourage the Congress to look at near term solutions to stop recent increases in traffic fatalities. The National Academy of Sciences report makes clear that alcohol is the leading killer on our roadways and therefore drunk driving should be a major focus in crash prevention. The good news is that doing more to prevent drunk driving will result in fewer drugged driving deaths, too.

Law enforcement is our best defense against drunk and drugged drivers. We urge the committee to work with law enforcement leaders to make sure that traffic enforcement is a priority. In addition, proper training such as SFST, ARIDE, and DRE are important tools police need to detect driver impairment, make arrests, and ultimately convict.

Finally, it is critical that we have the research and data needed to better understand the problem of drugged driving. Congress can start by reinstating the National Roadside Survey. In addition, we must look at ways to identify drug impairment, especially with regard to marijuana, in order to make better policy recommendations to the public.

Mr. Chairman, I'm here because my son Dustin was killed by a drunk and drugged driver. It is my hope that the recommendations I am making on behalf of MADD will help to make progress on drunk driving and drugged driving and prevent others from the same tragedy that has devastated my family.

Thank you again for the opportunity to testify before your committee. I am happy to answer any questions you might have.

Mr. LATTA. And thank you very much for your testimony today. And on behalf of the committee and the subcommittee we mourn your loss, because what we are here for is to make sure that other families don't suffer the same loss that you have suffered, the loss of your son. So we appreciate your testimony today.

Ms. Holmes, you are recognized for 5 minutes.

STATEMENT OF ERIN HOLMES

Ms. HOLMES. Thank you.

Good afternoon, Chairman Latta, Ranking Member Schakowsky, and distinguished members of the subcommittee. Thank you for the opportunity to testify on the issue of drug-impaired driving.

My name is Erin Holmes, and I am the Director of Traffic Safety at the Foundation for Advancing Alcohol Responsibility. Responsibility.org is a national not-for-profit organization and a leader in the fight to eliminate drunk driving and underage drinking. We are funded by leading distilled spirits companies, including Bacardi U.S.A., Beam Suntory, Brown-Forman, Constellation Brands, DIAGEO, Edrington, Mast-Jagermeister US, and Pernod Ricard USA.

I would first like to begin by expressing my gratitude. Leadership is needed to address impaired driving in all of its forms, and I applaud the committee for recognizing the seriousness of this problem and the need to push for solutions to save lives.

I also would like to acknowledge the efforts of the National Highway Traffic Safety Administration under the leadership of Deputy Administrator Heidi King. NHTSA has made drug-impaired driving a priority and is actively engaged in identifying countermeasures that work, furthering research, and increasing public awareness.

While not a new issue, drug-impaired driving has come into greater focus in recent years due to the increasing number of states that have legalized marijuana and the spread of the opioid and heroin epidemic.

Let me be clear: Drug-impaired driving is a serious public safety concern. In 2016, the most recent year for which we have data available, drugs were present in 43.6 percent of fatally injured drivers with a known drug test result.

Further complicating the issue is the realization that it is not uncommon for drivers to have more than one substance in their system. Research has continually shown that drugs used in combination or with alcohol can produce greater impairment than substances used on their own. In 2016, 50.5 percent of fatally injured drug-positive drivers were positive for two or more drugs, and 40.7 percent were found to have alcohol in their system as well.

Unfortunately, polysubstance-impaired drivers are often not identified if they have a blood alcohol concentration above the illegal limit of .08, which then, of course, has implications for supervision and treatment decisions.

So what can be done to address this problem? To effectively reduce drug-impaired driving and save lives, a comprehensive approach must be employed. Drug-impaired driving is more complex than alcohol-impaired driving, and we have heard some of those explanations here already today as to why that is so. Therefore, different policy approaches are needed to address certain aspects of

the problem. However, it is constructive to examine the policies and programs that have been effective in reducing alcohol-impaired driving and replicate these tactics when feasible. Some examples may include administrative license suspension, zero-tolerance laws for individuals under 21, and enhanced penalties for polysubstance use.

I encourage Congress to take a multifaceted approach that involves a combination of education, policy, and enforcement initiatives, which are outlined in detail in my written submission.

First and foremost, ongoing support and funding is needed to increase the number of law enforcement officers trained in Advanced Roadside Impaired Driving Enforcement, or ARIDE, and certified as drug recognition experts. Understanding that more resources are needed at the state level to accomplish this goal, responsibility.org partnered with the Governors Highway Safety Association to offer grants, which is now in its third year. Since that began, that program has resulted in more than 1,500 officers receiving drug-impaired-driving training in 13 different states.

We also recommend supporting NHTSA in expediting oral fluid testing research and exploring the creation of minimum standards for these devices, like with breath testing or ignition interlocks. Oral fluid screening devices test for the presence of the most common categories of drugs. They are quick and easy to use and minimally invasive. These devices could be another tool for law enforcement to use as part of a DUI investigation.

But identification of impaired drivers is only the first step. To improve outcomes, assessment must guide decisionmaking in the justice system. The screening and assessment of impaired drivers, whether drunk, drugged, or polyusers, for both substance use and mental health disorders is imperative to determine individual risk level and treatment needs. Congress should continue to support and make appropriations for assessment and treatment interventions and evidence-based criminal justice programs, such as DUI and treatment courts.

Other important recommendations to consider include supporting the creation of national minimum standards for toxicological investigations, allocating additional highway safety funds to improve the capabilities of state labs, monitoring NHTSA's progress in creating large-scale education campaigns and providing appropriations to expand those should they be deemed effective, continuing to invest in research initiatives to better understand drug impairment and identify effective countermeasures.

Congress, NHTSA, state highway safety offices, and traffic safety organizations must continue to work collaboratively to prevent the occurrence of this behavior, improve the administration of justice, and further knowledge in the field.

Thank you so much, and we look forward to working collaboratively with you on these issues.

[The prepared statement of Ms. Holmes follows:]



FOUNDATION FOR
ADVANCING ALCOHOL
RESPONSIBILITY

Testimony of Erin Holmes
on behalf of
The Foundation for Advancing Alcohol Responsibility

Before the
Subcommittee on Digital Commerce and Consumer Protection
of the
House Energy and Commerce Committee

Hearing on
"Examining Drug-Impaired Driving"
July 11, 2018

Good afternoon distinguished members of the committee. Thank you for the opportunity to testify on the issue of drug-impaired driving. My name is Erin Holmes and I am the Director of Traffic Safety at the Foundation for Advancing Alcohol Responsibility (Responsibility.org). Responsibility.org is a national not-for-profit organization and a leader in the fight to eliminate drunk driving and underage drinking. We are funded by the following distilled spirits companies: Bacardi U.S.A., Inc.; Beam Suntory; Brown-Forman; Constellation Brands, Inc.; DIAGEO; Edrington; Mast-Jägermeister US, Inc.; and Pernod Ricard USA. For 27 years, Responsibility.org has transformed countless lives through programs that bring individuals, families, and communities together to guide a lifetime of conversation around alcohol responsibility and by offering proven strategies to stop impaired driving. To find out more, please visit www.responsibility.org

Prior to joining Responsibility.org in 2014, I was a Research Scientist at the Traffic Injury Research Foundation (TIRF). During my tenure at TIRF, I published more than 40 reports, evaluations, and articles and delivered in excess of 50 presentations internationally on alcohol and drug-impaired driving, criminal justice system improvements, alcohol monitoring technologies, risk assessment, and drug policy. My complete curriculum vitae is enclosed with this testimony.

The issue of drug-impaired driving

Drug-impaired driving is the operation of a motor vehicle while under the influence of, or impaired by, any substance with psychoactive properties (including illicit substances, prescription medications, over-the-counter medications). When ingested, drugs can impair driver performance, particularly when taken in combination with alcohol or other drugs. This preventable behavior represents a significant threat to public safety.

While not a new issue, drug-impaired driving has come into greater focus in recent years due to the increasing number of states¹ that have legalized marijuana for medicinal and/or recreational purposes and the spread of the opioid and heroin epidemic through large swaths of the country has increased concerns about individuals driving high. Nearly 92 million adults in the United States (roughly 38% of the population), reported that they took a legally prescribed opioid in 2015.² Research has shown that 21-29% of patients prescribed opioids for chronic pain misuse them and between 8% and 12% will develop an opioid use disorder. In 2016 alone, 42,000 deaths were attributed to opioid overdoses. This translates to roughly 115 deaths every single day.³ Several high-profile incidents of overdoses behind the wheel, often with children in the vehicle, have become emblematic of the seriousness of this issue.⁴

While the true magnitude and characteristics of the drug-impaired driving problem are not known due to several significant data limitations⁵, the statistics that are available reveal that this issue is in need of urgent attention. In 2016, the most recent year for which data are available, the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) found that drugs were present in 43.6% of fatally-injured drivers with a known drug test result. This represents a substantial increase from 2005 when 27.8% of fatally-injured drivers tested positive (NHTSA, 2010; FARS, 2015). As in previous years, in 2016 marijuana was the most commonly found drug in the systems of drug-positive fatally-injured drivers. While 41.1% of these individuals tested positive for some form of marijuana, 19.7% of drug-positive drivers were found to have opioids in their system.

In addition to fatality data, results from NHTSA's National Roadside Survey (NRS) are also instructive in measuring the extent of drug-impaired driving in this country. In 2013-2014, NRS findings revealed that 22.4% of weekday day and 22.5% of weekend night-time drivers tested positive for illegal, prescription, or over-the-counter medications.⁶ (Berning et al., 2015). The drug that has shown the largest increase in weekend night-time prevalence is marijuana. In the 2007 NRS, 8.6% of weekend night-time drivers tested positive for the main psychoactive ingredient in marijuana, Delta-9 tetrahydrocannabinol (THC). This number increased to 12.6% in the 2013-2014 NRS. That is a 48% increase in less than seven years. Fewer drivers were found to have opioids in their system with 5.5% of weekday day and 4.7% of weekend night-time drivers testing positive.⁷

¹ Currently, 30 states have passed medical marijuana laws and nine states (AK, CA, CO, MA, ME, NV, OR, VT, WA) and DC have legalized recreational marijuana.

² Han, B., Compton, W.M., Blanco, C., et al. (2017). Prescription opioid use, misuse, and use disorders in U.S. Adults: 2015 National Survey on Drug Use and Health. *Annals of Internal Medicine*, 167(5), 293-301.

³ National Institute of Drug Abuse. (2018). Opioid overdose crisis. Washington, DC: Author. <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis>

⁴ See [Washington Post coverage](#) of several of these cases.

⁵ For an in-depth discussion of the limitations of FARS data including variability in testing rates, lack of standardization in testing protocols and laboratory cutoffs, and inability to infer impairment from drug presence alone, please refer to: Berning, A., & Smither, D.D. (2014). *Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes*. DOT HS 812 072. Washington, DC: National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812072>

⁶ Berning, A., Compton, R., & Wochinger, K. (2015). *Results of the 2013-2014 National Roadside Survey of Alcohol and Drug Use by Drivers*. *Traffic Safety Facts Research Note*. DOT HS 812 118. Washington, DC: NHTSA.

⁷ Kelley-Baker, T., Berning, A., Ramirez, A., et al. (2017). *2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers: Drug Results*. DOT HS 812 411. Washington, DC: NHTSA.

Concerns regarding polysubstance use

Further complicating the drug-impaired driving issue is the realization that it is not uncommon for drivers to take several impairing substances at the same time. According to NHTSA, while many individual substances taken by themselves may not impair driving sufficiently to raise crash risk, when taken with other substances the effects may be additive or synergistic and produce an increased risk of crash involvement.⁸⁻⁹ Research has continually shown that drugs used in combination or with alcohol produce greater impairment than substances used on their own.¹⁰ The combination of alcohol and marijuana is particularly risky as it can dramatically impair driving performance¹¹ and recent simulator research has shown that the use of alcohol in conjunction with marijuana can produce significantly higher blood concentrations of THC than marijuana use alone.¹²

The increased level of impairment and crash risk associated with polysubstance-impaired driving is concerning as is the rate at which this behavior appears to be occurring. According to FARS data, in 2016, 50.5% of fatally-injured drug-positive drivers were positive for two or more drugs and 40.7% were found to have alcohol in their system. New data released by the Washington Traffic Safety Commission identifies polysubstance impairment as the most common type of impairment found among drivers involved in fatal crashes.¹³ In fact, among drivers in fatal crashes between 2008 and 2016 that tested positive for alcohol or drugs, 44% tested positive for two or more substances with alcohol and THC being the most common combination.

Unfortunately, the prevalence of polysubstance-impaired driving is inevitably underreported. While the majority of law enforcement officers are trained to identify drivers who are impaired by alcohol, many officers are not trained to identify the signs and symptoms of drug-impaired driving. Moreover, it is easier for law enforcement to make an arrest and obtain a blood alcohol concentration (BAC) level from either a breath or blood sample than it is to complete an investigation for drug-impaired driving. The latter often requires an evaluation by a Drug Recognition Expert (DRE), a law enforcement officer with specialized training, who may not be readily available. Blood tests are also needed to confirm the presence of drugs in a suspect's system and due to delays in obtaining this sample, test results do not accurately reflect the concentration levels at the time of driving on account of the rapid metabolization of these substances.

If an officer observes impairment and can detect a BAC above the legal limit of .08, only DUI evidence and charges will likely be pursued. It is only when alcohol is ruled out as the cause of impairment or if the impairment is not consistent with the driver's BAC level that the use of drugs is explored. The

⁸ Compton, R., Vegega, M., & Smither, D. (2009) *Drug-Impaired Driving: Understanding The Problem & Ways to Reduce It: A Report to Congress*. Washington, D.C.: NHTSA.

⁹ Romano, E., Torres-Saavedra, P., Voas, R.B., et al. (2014). Drugs and alcohol: Their relative crash risk. *Journal of Studies on Alcohol and Drugs*, 75, 56-64.

¹⁰ Schulze, H., Schumacher, M., Urmeew, R., et al. (2012). *DRUID Final Report: Work Performed, Main Results and Recommendations*. Bergisch Gladbach, Federal Republic of Germany: Federal Highway Research Institute (BAST).

¹¹ Ramaekers, J., Robbe, H., & O'Hanlon, J. (2000). Marijuana, alcohol and actual driving performance. *Human Psychopharmacology: Clinical and Experimental*, 15, 551-558.

¹² Hartman, R.L., Brown, T.L., Milavetz, G. et al. (2015). Controlled cannabis vaporizer administration: Blood and plasma cannabinoids with and without alcohol. *Clinical Chemistry*, 61, 850-869.

¹³ Washington Traffic Safety Commission. (2018). *Marijuana Use, Alcohol Use, and Driving in Washington State: Emerging Issues with Poly-Drug Use on Washington Roadways*. Olympia: Author.

rationale is that testing for alcohol only saves both time and money.¹⁴ In fact, in some states there are policies in place that prevent labs for testing for chemical samples for the presence of drugs when a BAC is above .08 or .10 unless a request for additional testing is made. Therefore, DUI is the only crime where an investigation ceases once minimal evidence is obtained.

Several oral fluid pilots underscore the importance of testing beyond alcohol. In a study conducted in Miami-Dade County, 39% of drivers who were found to have a BAC above .08 also tested positive for the presence of drugs.¹⁵ In another pilot in Dane County, WI nearly 40% of the subjects with BACs exceeding .10 screened positive for one or more drug categories in both oral fluid and blood.¹⁶ In a real-world setting, the vast majority of these individuals would be identified as merely alcohol-impaired drivers.

One might question why it is necessary to identify drivers who use drugs in addition to alcohol if they can be prosecuted for DUI. The end result of current practice is that many drug-impaired drivers escape detection and the magnitude of the drugged driving problem is not accurately captured. More importantly, failure to identify drug use can hinder the identification of drug dependency and miss an opportunity to make informed decisions later in the criminal justice process. It is of vital importance for practitioners, particularly in community corrections and treatment, to have as much information as possible to make the most appropriate supervision and treatment decisions. The failure to test impaired drivers for drugs misses an opportunity to identify and address an underlying cause of impaired driving behavior and could result in recidivism.¹⁷

How to address the problem

To effectively reduce drug-impaired driving and save lives, a comprehensive approach must be employed. The problem is multi-faceted and, as previously noted, is frequently not limited to the use of a single impairing substance.

Lessons learned. Impaired driving comes in many forms. Alcohol, drug, and polysubstance-impaired driving all present a significant traffic safety threat. For more than three decades, a tremendous amount of work has been done to reduce alcohol-impaired driving and progress has been achieved as a result. Since 1982, there has been a long-term downward trend in alcohol-impaired driving fatalities. In the last 36 years, the number has been reduced by 50% and in the last decade, there has been a 34% decline. In 2016, alcohol-impaired driving fatalities accounted for 28% of all motor vehicle fatalities, the lowest percentage since NHTSA began reporting alcohol data. More than 10,000 lives continue to be lost annually which is completely unacceptable but it is important to recognize that the declines that have been achieved and the lessons that have been learned in recent decades can inform decisions on how to address impaired driving as a whole. Decreases in fatalities can be attributable to the changing of societal norms, increased enforcement, and more strategic and appropriate use of sanctions and

¹⁴ Government Accountability Office. (2015). *Drug-Impaired Driving: Additional Support Needed for Public Awareness Initiatives*. Washington, DC: United States Government Accountability Office.

¹⁵ Logan, B., Mohr, A., & Talpins, S. (2014). Detection and prevalence of drug use in arrested drivers using the Dräger Drug Test 5000 and Affiniton DrugWipe oral fluid drug screening devices. *Journal of Analytical Toxicology*: doi:10.1093/jat/bku050.

¹⁶ Edwards, L., Smith, K., & Savage, T. (2017). Drugged driving in Wisconsin: Oral fluid versus blood. *Journal of Analytical Toxicology*, 41(6), 523-529.

¹⁷ Talpins, S., & Rogers, P. (2017). Overcoming the plateau: Reducing impaired driving by addressing drug-impaired drivers. *Global Journal of Addiction & Rehabilitation Medicine*, 1(4), DOI: 10.19080/GJARM.2017.01.555569.

treatment. To continue to achieve progress, improved and expanded implementation of effective programs and interventions (e.g., high visibility enforcement, ignition interlocks, DUI Courts, etc.) must continue.

Drug-impaired driving in many ways is a more complex problem than alcohol-impaired driving. Many of the policies and countermeasures that are effective in addressing DUI such as per se legal limits, ignition interlocks, and emerging technologies like the Driver Alcohol Detection System for Safety (DADSS) will not necessarily be viable options to reduce the occurrence driving under the influence of drugs. However, while recognizing that different policy approaches are needed to address certain aspects of drug-impaired driving, many of the strategies that have been utilized to reduce alcohol-impaired driving fatalities and recidivism can be translated and employed (e.g., zero tolerance laws for individuals under the age of 21, administrative license suspension/revocation (ALS/ALR)¹⁸, enhanced penalties, etc.). In other words, it is constructive to examine the policies and programs that have been effective and replicate these tactics when feasible to do so or fold drug-impaired driving into existing DUI enforcement and education efforts.

Leadership. In order to address this issue, ongoing leadership is also required at both the national and state level. Congress assumed such a role in 2015 when drug-impaired driving was identified as a priority in the Fixing America's Surface Transportation (FAST) Act. The legislation tasked NHTSA with studying the relationship between marijuana use and driving impairment and to identify effective methods to detect marijuana-impaired drivers. Also in response to a requirement in Section 4008, the current state of knowledge on marijuana-impaired driving was summarized and provided to Congress in a 2017 report.¹⁹ The FAST Act also directed NHTSA to create a national public awareness campaign to educate the public on the dangers of driving impaired by drugs. At the end of January 2018, NHTSA's Deputy Administrator Heidi King announced that drugged driving will become a top priority for the agency. In March, NHTSA brought together stakeholders in a *Call to Action*²⁰ to develop and adopt a collaborative and coordinated strategy to "set a course of action and take measurable steps to address the nation's drugged driving problem." NHTSA's engagement and leadership on this issue should be applauded and will be vital in ensuring that the issue is addressed on multiple fronts and done so in a relatively consistent manner.

At the state level, the Governors Highway Safety Association (GHSA) has been instrumental in providing states with guidance and identifying research, policy, program, and education needs to combat this problem. Since 2015, GHSA with support from Responsibility.org, has released three reports²¹ that synthesize the current state of knowledge, drugged driving laws, and intervention strategies. An advisory panel consisting of national experts weighed-in to develop practical recommendations that policymakers, state highway safety offices, and practitioners can utilize to prevent and reduce drug-

¹⁸ For more information on this policy approach, refer to Talpins, S., et al., (2014). License revocation as a tool for combating drugged driving. *Impaired Driving Update*, 18(2), 29-33.

¹⁹ Compton, R. (2017). *Marijuana-Impaired Driving: A Report to Congress*. DOT HS 812 440. Washington, D.C.: National Highway Traffic Safety Administration.

²⁰ Press release: <https://www.nhtsa.gov/press-releases/nhtsa-launches-drug-impaired-driving-initiative-and-announces-march-15-summit>

²¹ These reports include the original *Drugged Driving: A Guide for States* (2015), the 2017 updated report, and the enclosed *Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States* (2018).

impaired driving. These recommendations, several of which are highlighted below, provide a roadmap for action.

Members of Congress, state legislators, and highway safety officials should continue to lead and identify ways to support and fund impaired driving policies and training while simultaneously seeking to close known barriers and knowledge gaps through system improvements and research.

Solutions

To reduce drug-impaired driving, policymakers are encouraged to take a broad and multi-faceted approach that involves a combination of education, policy, and enforcement initiatives. This includes expanding training for law enforcement, promoting the testing and use of new technologies, improving testing and data collection, focusing on high-risk individuals by emphasizing assessment and treatment in conjunction with accountability, and increasing public education through awareness campaigns. In addition, investment in research to better understand drug impairment and identify effective drug-impaired driving countermeasures should also be a priority.

1. **Enforcement** – law enforcement officers first began developing methods to identify drug impaired drivers in the 1970s, when the Los Angeles Police Department established the Drug Evaluation and Classification (DEC) Program.²² The purpose of the program is to train officers to become Drug Recognition Experts (DREs), who are capable of identifying drug impairment. Officers are required to go through three phases of training totaling more than 150 hours along with field certification. The DEC program goes beyond the SFST training that most officers receive. DREs use a standardized protocol that allows them to determine whether a suspect is impaired, if that impairment is caused by drugs or can be attributed to a medical condition, and the category of drug(s) that are the cause of the impairment.

Today, all 50 states, Canada, and the United Kingdom participate in the DEC program. But not every jurisdiction in the country has an officer trained as a DRE. Due to the level of commitment required to complete the training and the cost to train officers, it is not always a viable option for agencies that have limited staff and resources. In an effort to increase education and training among patrol officers more broadly, the Advanced Roadside Impaired Driving Enforcement (ARIDE) program was created. ARIDE is designed to bridge the gap between SFST training and the DEC program in that it is 16 hours of training that educates officers on how to identify the signs and symptoms of drug impairment.

There is consensus within the traffic safety field that more officers need to be trained in ARIDE and certified as DREs. This was one of the priority recommendations identified in the GHSA reports. In 2016, 773 ARIDE classes were held nationwide, training more than 13,500 officers, prosecutors, and toxicologists. As of the end of 2016, there were 8,277 certified DREs throughout the country with 1,543 new officers trained that year.²³ Understanding that more resources are needed at the state level to accomplish this goal, Responsibility.org has established a grant program with GHSA, now in

²² Learn more about the DEC program: <http://www.theiacp.org/Drug-Recognition-Expert-Section>

²³ International Association of Chiefs of Police. (2017). *2016 Annual Report of the IACP Drug Evaluation and Classification Program*. Alexandria, VA: <http://www.decp.org/wp-content/uploads/2018/03/2016-DECP-Annual-Report.pdf>

its third year, to provide funding to states to increase the number of officers trained to identify drug impairment. As a result of these grants, more than 1,500 officers in 13 states have received training.²⁴

Recommendations for Congress:

- Ongoing support and funding is needed to increase the number of law enforcement officers trained in both ARIDE and the DEC program. In the recent Senate FY 2019 Transportation Housing and Urban Development appropriations, the Committee directed NHTSA to provide states with flexibility to use impaired driving countermeasures grant funding for both DRE and ARIDE training. An additional \$5,000,000 appropriation was made to facilitate an increase in law enforcement training. Congress is encouraged to continue allocating funds to provide more training opportunities and to identify ways to make it easier for states to use impaired driving funds to address specific drug-impaired driving needs.
 - Congress is also encouraged to make appropriations to provide additional training for prosecutors and judges to better educate them on drug-impaired driving issues.
2. **Technology (oral fluid screening)** – the use of oral fluid screening devices to test for the presence of drugs at roadside or in a police station has the potential to assist law enforcement in identifying a larger number of drug-impaired drivers who would otherwise avoid detection. This practice would provide objective data to help establish probable cause and require an evidential chemical sample. It is recommended that this technology be utilized within the context of a broader impaired driving investigation similar to preliminary breath tests (e.g., observations while vehicle is in motion and during the traffic stop, clues on the standardized field sobriety tests, etc.).

These devices offer many advantages over blood and urine testing as they are quick and easy to use, minimally invasive, have a short detection window (i.e., positive findings are indicative of recent as opposed to historical use), and provide a sample proximate to the time of driving.²⁵ Multiple studies have found these devices to be reliable and valid including a formal evaluation done in the European Union that identified several devices with both sensitivity and specificity of more than 80%²⁶ and a recent Canadian evaluation²⁷ that found sensitivity exceeded 80% for most drug categories (including cannabis) and specificity exceeded 90% for all drug categories. As a result of these findings, Canadian law enforcement agencies plan to move forward with the deployment of oral fluid testing once legalization occurs later this year. Other countries such as Australia and the United Kingdom have been using this roadside drug testing technology for years.

²⁴ Press release for 2018 grant announcement: <https://www.ghsa.org/resources/news-releases/FAAR-Grants18>. States that have received grant funds include FL, ID, MN, MT, NV, NY, IL(x2), RI, TX, VT, WA, WV, and WI.

²⁵ Bosker, W., & Huestis, M. (2009). Oral fluid testing for drugs of abuse. *Clinical Chemistry*, 55(11), 1910-1931; Moore, C., & Crouch, D. (2013). Oral fluid for the detection of drugs of abuse using immunoassay and LC-MS/MS. *Bioanalysis*, 5(12), 1555-1569.

²⁶ Schulze, H., Schumacher, M., Urmeew, R., et al. (2012). *DRUID Final Report: Work Performed, Main Results and Recommendations*. Bergisch Gladbach, Federal Republic of Germany: Federal Highway Research Institute (BAST).

²⁷ Beirness, D., & Smith, D. (2017). An assessment of oral fluid drug screening devices. *Canadian Society of Forensic Science Journal*, 50(2), 55-63.

Jurisdictions across the United States (including AL, CA, CO, FL, KS, MI, OK, VT) have piloted various devices to assess their viability. These pilots have concluded that oral fluid devices provide good information to law enforcement regarding the presence of active drugs in drivers' systems. In addition to providing law enforcement with another investigative tool, oral fluid testing could facilitate the creation of an ALS/ALR system like the one that exists for alcohol because of the on-site nature of the results. Current testing mechanisms (e.g., blood and urine testing) make the establishment of this administrative process far more difficult to implement.

Recommendations for Congress:

- NHTSA is currently researching the feasibility of incorporating on-site oral fluid devices in criminal justice processes. Given the pressing need to better identify drug-impaired drivers, Congress should support NHTSA in expediting this research and prioritize the creation of minimum standards for these devices (similar to what has been done for breath testing instruments and ignition interlocks).
 - Congress should support the ongoing development and testing of new drug detection technologies (e.g., marijuana breathalyzers, transdermal devices).²⁸
3. **Increasing standardization of drug testing** – one of the most significant challenges in collecting robust drug-impaired driving data is the lack of consistency in testing from one jurisdiction to another. Data is limited because some states test a very small percentage of fatally-injured drivers for the presence of drugs. Furthermore, laboratories using different test panels with varying cutoff levels. For example, some labs will have more sophisticated equipment and funding and, as a result, can test for a wider array of substances. Without improved testing it is difficult to increase the quality of data and subsequent analyses. For example, the inconsistent rate of drug testing and the lack of minimum standards that all labs can adhere to makes it difficult for FARS data to be used to compare states. It also makes it difficult to identify trends and generalize findings.

Recommendations for Congress:

- Congress should support the creation of national minimum standards for toxicological investigations in motor vehicle crashes and drug-impaired driving cases. The National Transportation Safety Board (NTSB) put forth this recommendation in 2012 and suggested that NHTSA develop and disseminate such standards to improve consistency.²⁹ Model standards have already been created by both the National Safety Council³⁰ and the Substance Abuse and Mental Health Services Administration (SAMHSA). NHTSA, in consultation with experts in the field of forensic toxicology should collaborate and reach consensus on what should constitute

²⁸ For more information about these emerging technologies, refer to Talpins, S., Holmes, E., & Sabet, K. (2017). Fingerprint sweat testing: A viable option for testing drugged drivers? *Tennessee District Attorneys General Conference DUI News*, 58, 4-5; Talpins, S., Holmes, E., Kelley-Baker, T., et al. (2017). Breath testing for cannabis: An emerging tool with great potential for law enforcement. *Between the Lines*, 25(2).

²⁹ National Transportation Safety Board. (2012). Recommendations H-12-32 and 33 to NHTSA. Washington, DC: www.nts.gov/safety/safety-recs/RecLetters/H-12-032-033.pdf

³⁰ Logan, B., Lowrie, K., Turri, J. et al. (2013). Recommendations for toxicological investigation of drug-impaired driving and motor vehicle fatalities. *Journal of Analytical Toxicology*, doi:10.1093/jat/bkt059 and the 2018 update to these recommendations.

minimum drug testing standards. State officials should be involved in this process and be strongly encouraged to adopt and implement the testing protocols.

- Additional highway safety funds should be allocated to improve the quality of state labs. States should be afforded the flexibility to use said funds to hire additional lab staff and purchase lab instrumentation (such as liquid chromatography-tandem mass spectrometry (LC-MS/MS) to perform more advanced drug analysis). Improving the quality and abilities of laboratories has the added benefit of reducing backlog in DUI/DUID cases which is a common challenge encountered in many states.
4. **Targeting high-risk impaired drivers** – to reduce impaired driving fatalities, it is imperative that efforts focus on individuals who pose the highest risk to recidivate. Within the context of drunk driving, these individuals are typically classified as offenders who drive with high blood alcohol concentrations (.15 or higher), and do so repeatedly as evidenced by multiple arrests. Highly resistant to long-term behavior change, these individuals require more intensive supervision, accountability, and treatment interventions tailored to their individual needs. To save lives, reduce recidivism, and stop the revolving door of the justice system, more must be done to identify and address the underlying causes of impaired driving behavior among both alcohol and drug-impaired drivers. Polysubstance-impaired drivers are likely to fit within this high-risk category as they are at an elevated crash risk due to their use of multiple impairing substances.

To improve outcomes, screening and assessment must guide decision-making within the justice system. The screening and assessment of impaired drivers – whether drunk, drugged, or poly-users – is imperative to determine individual risk level and treatment needs. Moreover, this practice allows practitioners to triage and allocate resources to those who require greater intervention.

Assessments should not be limited to the identification of substance use disorders. While the most obvious etiology of impaired driving is an alcohol and/or drug problem, many impaired drivers also suffer from one or more mental health disorders. In a study conducted by researchers at Cambridge Health Alliance, approximately 45% of repeat impaired drivers were found to have a lifetime major mental health disorder other than alcohol/drug abuse or dependency.³¹ Unfortunately, co-occurring disorders are often overlooked among this offender population and the failure to identify mental health issues misses an opportunity to employ a comprehensive approach to treatment and to address all underlying pathways to offending. Fortunately, assessment instruments are now available to assist practitioners in decision-making and facilitating recovery. Instruments such as the Computerized Assessment and Referral System (CARS)³² and the Impaired Driver Assessment (IDA) are validated among an impaired driver population and are available free of cost to interested parties.

Another high-risk group that could benefit from specific policies are young drivers. Motor vehicle crashes are the leading cause of death for U.S. teenagers and young drivers are at-risk of crash

³¹ Shaffer, H., Nelson, S., LaPlante, D., LaBrie, R., & Albanese, M. (2007). The epidemiology of psychiatric disorders among repeat DUI offenders accepting a treatment-sentencing option. *Journal of Consulting and Clinical Psychology*, 75(5), 795-804.

³² Holmes, E. (2017). *Computerized Assessment and Referral System: Implementation Process Evaluation*. Arlington, VA: Responsibility.org. To learn more about CARS and download the instrument, visit: www.carstrainingcenter.org

involvement due to their relative inexperience behind the wheel.³³ The use of impairing substances (e.g., alcohol, marijuana and/or other drugs), puts them at heightened risk of being involved in a crash. Decades of research have shown that policies targeted at youth are effective in reducing crashes. For example, the 21 minimum legal drinking age law, graduated licensing laws, and zero tolerance policies for people under 21 who drive with any alcohol in their system have led to a nearly 80% reduction in alcohol-involved traffic fatalities among young drivers since 1982. In a 2009 analysis, Fell et al. estimated that zero tolerance laws save 159 lives each year.³⁴ The passage of zero tolerance laws for drugs, including marijuana, for drivers under the age of 21 could potentially save lives. This approach would apply a well-established and evidence-based policy and extend it to other illicit substances and send a strong message about the dangers of drug-impaired driving.

Recommendations for Congress:

- Congress should continue to support and make appropriations for assessment and treatment interventions and associated evidence-based criminal justice programs such as treatment courts (e.g., DUI Courts). Investment in these practices can facilitate behavior change, long-term recovery, and reduce recidivism.
 - Congress and state legislatures should support the establishment of zero tolerance laws for drivers under the age of 21 who drive with illicit or impairing drugs in their systems, creating parity with existing zero tolerance alcohol laws.
5. **Education efforts** – to prevent impaired driving in all forms it is necessary to educate the public on the risks, illegality, and consequences of engaging in the behavior. Public education and advocacy initiatives can be credited with changing societal norms related to drunk driving and, subsequently, altering behavior. A similar preventive approach should be employed with drug-impaired driving as the public tends to have pervasive misperceptions about the behavior including: DUI is not a serious problem; driving high is a safer alternative to driving drunk; drug use (particularly marijuana use) does not adversely affect driving ability or, in some instances, may improve driving ability; driving high is not illegal; and law enforcement cannot detect individuals impaired by drugs. Recent roadside survey data from Washington state reveal that these attitudes are quite common for marijuana use and the majority of users (64%) who self-report driving within two hours of smoking feel as though their drug use did not make any difference in their driving.³⁵

Of particular concern are youth attitudes about marijuana-impaired driving. A 2017 study conducted by Liberty Mutual Insurance and Students Against Destructive Decisions (SADD) illustrates this point. In a survey of 2,800 high school students, 33% of respondents believed it was legal to drive under the influence of marijuana in states where recreational use has been legalized. Furthermore, only 68% of teens said that driving under the influence of marijuana is dangerous, 27% thought it does

³³ Centers for Disease Control and Prevention. (2015). Web-based Injury Statistics Query and Reporting System (WISQARS).

³⁴ Fell, J., Fisher, D., Voas, R., Blackman, K., & Tippetts, S. (2009). The impact of underage drinking laws on alcohol-related fatal crashes of young drivers. *Alcohol Clinical and Experimental Research*, 33(7), 1208-1219.

³⁵ Washington Traffic Safety Commission. (2018). *Marijuana Use, Alcohol Use, and Driving in Washington State: Emerging Issues with Poly-Drug Use on Washington Roadways*. Olympia: Author.

not make someone a worse driver, and 22% admitted that this behavior was common practice among their peers.

Recommendations for Congress:

- National campaigns are needed to dispel misperceptions, change attitudes, and hopefully, change behavior as a result. These campaigns should have clear messages that educate the public about the inherent dangers of drug-impaired driving. Several states including Colorado (*Drive High, Get a DUI* and *The Cannabis Conversation*), California (*DUI Doesn't Just Mean Booze*), and Wisconsin (*Dose of Reality*) have developed and implemented well-received campaigns that can serve as examples. Congress is encouraged to monitor NHTSA's progress in creating largescale education campaigns and to provide appropriations to expand these public outreach efforts if deemed effective.
- Given the current opioid epidemic, there must be more education in the public health and medical fields. While prescription drugs contain labels that warn against operating heavy machinery and many physicians and pharmacists emphasize this information with patients, more can be done. Congress should encourage federal agencies including NHTSA, the White House Office on National Drug Control Policy (ONDCP), and the Federal Drug Administration (FDA) to explore opportunities to increase education about the dangers of driving after using prescription drugs.

Additional policy and system improvements recommendations can be found in the accompanying GHSA report (see Hedlund, 2018) and Responsibility.org Policymakers Checklist.

In summation, impaired driving in all its forms presents a significant threat to public safety and is an economic burden on society. In the climate of the opioid epidemic and post-legalization America, jurisdictions are facing the challenge of how to effectively address drug-impaired driving. Congress, NHTSA, state highway safety offices, traffic safety organizations, and practitioners must continue to work collaboratively and take a systems approach to prevent the occurrence of this behavior, improve the administration of justice, and further knowledge in the field. We look forward to engaging with these stakeholders in the coming months and applaud the leadership that continues to be exhibited at the Federal level. Collectively, we can reduce drug-impaired driving, decrease recidivism, and ultimately, save lives.

Testimony of Erin Holmes, Director of Traffic Safety at Responsibility.org:

Key Takeaways & Recommendations

The drug and polysubstance-impaired driving problem. Drug-impaired driving is a serious public safety concern and poses a major threat on the nation's roadways. In 2016, the most recent year for which data are available, the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) found that drugs were present in 43.6% of fatally-injured drivers with a known drug test result.

Further complicating the issue is the realization that it is not uncommon for drivers to take several impairing substances at the same time. Research has continually shown that drugs used in combination or with alcohol produce greater impairment than substances used on their own. In 2016, 50.5% of fatally-injured drug-positive drivers were positive for two or more drugs and 40.7% were found to have alcohol in their system. Polysubstance-impaired drivers are often not identified if they have a blood alcohol concentration (BAC) above .08 which has implications for supervision and treatment.

Solutions. To effectively reduce drug-impaired driving and save lives, a comprehensive approach must be employed. Drug-impaired driving is more complex than alcohol-impaired driving; therefore, different policy approaches are needed to address certain aspects of the problem. However, it is constructive to examine the policies and programs that have been effective in reducing alcohol-impaired driving and replicate these tactics when feasible to do so or fold drug-impaired driving into existing DUI enforcement and education efforts.

Ongoing leadership is required at both the national and state level. NHTSA recently announced that drug-impaired driving will be a top agency priority. Their engagement will be vital in ensuring that the issue is addressed on multiple fronts and done so in a relatively consistent manner. Members of Congress, state legislators, and highway safety officials should continue to lead and identify ways to support and fund impaired driving policies and training while simultaneously seeking to close known barriers and knowledge gaps through system improvements and research.

What can Congress do? Policymakers are encouraged to take a broad and multi-faceted approach that involves a combination of education, policy, and enforcement initiatives. Recommendations include:

- Provide ongoing support and funding to increase the number of law enforcement officers trained in both ARIDE and the DEC program.
- Provide appropriations for prosecutor and judicial training to better educate them on drug-impaired driving issues.
- Support NHTSA in expediting oral fluid testing research and prioritize the creation of minimum standards for these devices (similar to what has been done for breath testing instruments and ignition interlocks).
- Support the ongoing development and testing of new drug detection technologies (e.g., marijuana breathalyzers, transdermal devices).

- Support the creation of national minimum standards for toxicological investigations in motor vehicle crashes and drug-impaired driving cases.
- Allocate additional highway safety funds to improve the quality of state labs. States should be afforded the flexibility to use said funds to hire additional lab staff and purchase lab instrumentation (such as liquid chromatography-tandem mass spectrometry (LC-MS/MS) to perform more advanced drug analysis).
- Continue to support and make appropriations for assessment and treatment interventions and associated evidence-based criminal justice programs such as treatment courts (e.g., DUI Courts).
- Support the establishment of zero tolerance laws for drivers under the age of 21 who drive with illicit/impairing drugs in their systems, creating parity with existing zero tolerance alcohol laws.
- Monitor NHTSA's progress in creating largescale drug-impaired driving education campaigns and provide appropriations to expand these public outreach efforts if deemed effective.
- Encourage federal agencies including NHTSA, the White House Office on National Drug Control Policy (ONDCP), and the Federal Drug Administration (FDA) to explore opportunities to increase education about the dangers of driving after using prescription drugs.
- Continue to invest in research initiatives to better understand drug impairment and identify effective drug-impaired driving countermeasures.

Supporting materials:

- Hedlund, J. (2018). *Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States*. Washington, DC: Governors Highway Safety Association.
- Responsibility.org (2017). *Driving Under the Influence of Drugs: A Checklist for Policymakers*.
- Flannigan, J., Talpins, S., & Moore, C. (2017). Oral fluid testing for impaired driving enforcement. *Police Chief Magazine*, January issue, 58-63.

Suggested additional reading:

- Hedlund, J. (2017). *Drug-Impaired Driving: A Guide for States*. Washington, DC: Governors Highway Safety Association. https://www.ghsa.org/sites/default/files/2017-07/GHSA_DruggedDriving2017_FINAL_revised.pdf

Mr. LATTA. Well, thank you very much.

And we appreciate all your testimony given to the subcommittee today.

And I just want to let members know that they did just call votes. So, if we could, I will try to get my first questions in first before we have to run down to vote.

But if I could start, Ms. Holmes, with you, just following up on what you were talking about on what states are doing out there to address the drug-impaired driving, are there any states that can be models for others? And why do you believe that some states are at the forefront in addressing this issue?

Ms. HOLMES. I think there are a number of different things that are being done well, depending on the area. Each state has individual and unique challenges and can be constrained by their laws.

I would look to Colorado as a leader and example on public education and information campaigns. I believe they have done a phenomenal job, and they have worked towards expanding their messaging.

They were put in a difficult position when Amendment 64 became law back in 2012. They weren't prepared and had to put together a campaign relatively quickly. But since that time, their "Drive High, Get a DUI" campaign has expanded in its messaging, first from focusing and educating the public in Colorado that, while, yes, it is now legal to use marijuana, it is not legal to use and drive, because you can, in fact, get a DUI.

They have also focused on increasing messaging around crash risk associated with marijuana-impaired driving. And they have also looked at different aspects of the problem, like consuming edibles and driving. And now they are implementing a new campaign called The Cannabis Conversation, where they reach out to communities of users.

Other states, like Washington, have done a very good job with data collection. They have been able to go back and do a lot of analysis on fatally injured drivers to get a better sense of what the data is telling them: not only what percentage of fatally injured drivers over a lengthy period of time are testing positive for marijuana, but also who is testing positive for the active psychoactive component—that is the Delta-9-tetrahydrocannabinol—versus the inactive metabolites. They have also focused on being able to identify which drivers tested above or below their per se limit of 5 nanograms.

I would also commend California for the work that they have done on laboratory testing and investing in lab capabilities. They have also looked to establish a blueprint to be able to guide decisionmaking in the future.

What I would always encourage all states to do is to look at this issue irrespective of what challenges they are facing with drug policy and with drug use in their states. The sooner you can start to plan ahead, the better prepared you will be. And states that have not gone down that road or have not been extremely hard-hit by either legalization or by the opioid epidemic, they are in the best position to learn the lessons from other jurisdictions and implement them or plan for the future.

Mr. LATTA. Thank you.

Ms. Harmon, given your unique perspective on this issue, just talking about California, from the local level, what are some of the day-to-day obstacles in combating drug-impaired driving that you have seen?

Ms. HARMON. Certainly, I think one of the largest obstacles that we continue to have in California is the relationship that our public has with law enforcement. Law enforcement is key to dealing with drug-impaired driving. Their impairment models that they are using, we have published research that we believe that they are effective even with drugs like marijuana.

The other issue is the resources that the system as a whole has in addressing the type of testing that really needs to be done at a comprehensive level. Almost every jurisdiction, with the exception of two, only tests drivers above a .08 percent. In the last few years, we have been able to convince coroners' offices and medical examiner offices that marijuana or the active drug, THC, is an important drug to be testing. So we do now have our fatally injured drivers tested for marijuana.

But the scope of testing that is done in our state is limited because of the resources that the laboratories have and the access they have in improving the technology, as well as the staffing resources that they need in order to deal with the problem.

The other issue is that we are dealing with a vast number of drugs. Our five most prevalent drugs in our jurisdiction involve both illicit and prescription drugs. And the drugs are all tested slightly differently. And so you have to have state-of-the-art technology in order to effectively do that and to be able to test for all of the drugs in a timeframe that is reasonable. Because drugs break down not just in a person's system but also in the samples. So if the samples are sitting for extended periods of time and not getting tested or only being screened and then at a later time being tested, you are affecting the quality of that evidence for a prosecution.

Mr. LATTA. Well, thank you very much.

And my time is about ready to expire. And, as I said, we can go run down and vote. Would that be all right?

Ms. SCHAKOWSKY. Right now?

Mr. LATTA. Right. We will recess?

Ms. SCHAKOWSKY. OK.

Mr. LATTA. Yep. And we will vote and come right back.

Thank you.

We will stand in recess.

[Recess.]

Mrs. WALTERS [presiding]. All right. We are going to reconvene with questions and I am going to recognize Ranking Member Schakowsky.

Ms. SCHAKOWSKY. Thank you very much.

So here we are again, and I appreciate your waiting. I know it's kind of a drag, but that's our schedule. So I wanted to start by asking or actually just saying to Ms. Sheehy-Church I just appreciate you so much and, certainly, my heart goes out to you and the fact that you have made this a mission of yours I think is so incredibly important.

Moms Against Drunk Driving, as you pointed out in your testimony, has really changed the face—we are not at zero, that's for sure, but the 21 years old, the zero tolerance, the .08—those are really attributed to the kind of grassroots activism often of coming out of tragedy.

So I just want to say that. I am so grateful to you.

So I am just wondering, would actually going further and lowering the legal blood alcohol level help reduce deaths from drunk driving? Is that even on the table or realistic?

Ms. SHEEHY-CHURCH. Well, obviously, heard from NTSB that they were recommending .05. But the reality is once the recommendation comes in they kind of walk away and leave us to do the work and others—advocacy groups—to do the work to try to go to you all to try to see if there is an appetite and a willingness to do that.

We are not there yet, and I think if we stick to the campaign that we currently have right now, which is really supporting law enforcement, we will save more lives faster than taking a look at that down the road.

Impairment is impairment, and when we look at someone who has been arrested or accused of a DUI the fact is they are impaired no matter what it is.

So I think spending that time right now maybe down the road. But I think right now, more research is needed but, more importantly, we need to stop what's happening on the roads.

I hear a lot about the fatalities and the blood draws and everything on fatalities. We need to do something that's in advance. We have got to stop something now.

We need a silver bullet now, and right now the only thing we have now is law enforcement—their ability to be boots on the ground and make sure that we do something before tragedy occurs.

Ms. SCHAKOWSKY. Thank you.

Let me acknowledge, by the way, we have dueling hearings, which is why I was not here for most of your—I heard your testimony. But so let me apologize if I repeat things that have already been said.

I am just wondering if I could ask any of you, what else should be done to help stop drunk or impaired driving that can be done at the federal level?

Any suggestions for us? And can I start with Dr. DuPont?

Dr. DUPONT. Yes, that was a point of my testimony. I gave a list of eight things that I thought were very important.

Ms. SCHAKOWSKY. OK. I can go back to that, but maybe it bears repeating.

Dr. DUPONT. No. No. We need data, I think, is the most important thing of the nature and extent of the problem, and I think as we have that, it drives everything else.

So that's the most important thing. For example, getting the FARS data—the fatally injured drivers—having all those drivers tested for drugs and alcohol and having—

Ms. SCHAKOWSKY. So not just drunk drivers over .08 that get tested for other—

Dr. DUPONT. Every fatally injured driver—

Ms. SCHAKOWSKY. Got it.

Dr. DUPONT [continuing]. Should be tested for drugs and alcohol. That's what I am thinking, and that NHTSA can establish guidelines for how to do that. Right now, it's hit or miss. One state will do one thing, another another.

If NHTSA had a standard package—here's what we recommend for testing for fatally injured drivers—that would be a very helpful thing to—for us to do, for example.

The simple thing to me is encourage laws for under the age of 21 to have zero tolerance. Marijuana is illegal in every state in the country under 21.

If a 20-year-old driver has alcohol at below .08, it's still a violation, and we can do that with marijuana. And doing that with younger drivers—that's the 16 to 20—that makes a difference.

That would be a step that would make things better, I think, that would be.

The poly drug problem we talked about, it's where you are now and it's where we are going, into more and more of that. We need to have additional penalties for people who are using multiple—

Ms. SCHAKOWSKY. I am looking at the clock. I guess I just ran out of how fast 5 minutes goes. I apologize.

I will definitely look at all of your testimony and I think this is a bipartisan issue. I don't think there is any question about it, and if there are things that we should do.

But I think data—does everybody agree—is really important for us to do.

Thank you.

Mrs. WALTERS. The chair will recognize the gentleman from Indiana, Mr. Bucshon.

Mr. BUCSHON. Thank you, Chairman.

I was a surgeon before I was in Congress so I have had trauma patients who have been in car crashes and other things and seen some of the results of impaired driving, from that perspective.

I also had another hearing in the Health Subcommittee so I am sorry I wasn't here for your testimony. But I've read through your testimony.

One of the things as a physician that concerns me is across the country we are legalizing marijuana for recreational use. I personally oppose that based on medical grounds.

Evidence has shown that in the developing brain, which would be a young person all the way up through their mid to late 20s that there is substantial evidence of permanent long-term cognitive changes and that I think we are going to find later on are going to be substantial.

That said, the other thing I am concerned about is in the short term, putting in legal sustainable ways to determine how impaired people are when they are driving when they are using marijuana exclusively, it's easier if they have alcohol at a high level or something.

But I think you're going to start seeing more of that. You're going to start seeing more impaired driving.

We had a case in my district where a young lady, a teenager, was sledding and unfortunately, was hit by an impaired driver.

It's complicated, but the gist of it is the impaired driver didn't have any alcohol in their system.

But, clearly, in the field, the officer felt that they were impaired and then, of course, when you go to court there is no substantial legal evidence that they were impaired at the time other than the word of the officer, because, as you know, THC doesn't stay in the bloodstream very long.

Someone pointed that out in their testimony. It gets distributed into your body. It can stay in your hair and your fat for a long time. But in the short term, you can't determine, at least at this point, legally what determines impairment.

So the question I have—and anyone could start to address this—is how do we begin to get a national legal standard for impairment?

Ultimately, the states will do it but, how we did with the .08—we have ways of having the states adopt a national standard.

How do we get to that point? Because I am pretty concerned about it. Indiana, honestly, it's not a partisan issue. Indiana is pretty red, but the legislators are talking about legalizing recreational use in our state.

So we will start with Dr. DuPont and how can we get to a legal standard for impairment with marijuana use that will hold up in court?

Dr. DUPONT. Well, I think we do have tests for impairment. We have the field sobriety test and the ARIDE test. Those are tests for impairment.

People are not drug tested unless they fail those tests. When they fail those tests and they have drugs present, that should be sufficient for the penalty, right there, and once you start to try to find a tissue level for any other drug, you're lost, and I use a simple example to make this point involving drug treatment and methadone is a treatment for drugs.

Mr. BUCSHON. Right.

Dr. DUPONT. And if you take a methadone dose of 40 milligrams, that's lethal to a nontolerant person.

Mr. BUCSHON. All right.

Dr. DUPONT. A single dose. OK. For a methadone maintained patient, they typically take 100 milligrams a day and have no impairment—no impairment. I want you to hear that—no impairment.

Mr. BUCSHON. Oh, yes.

Dr. DUPONT. So if you have a tissue level for methadone, you can't say this one's impaired and that one isn't. The ultimate impairment is death.

We don't have to have a scientific study. If they are dead, they are impaired, and that's at 40 milligrams. But at 100 milligrams, there is no impairment. That's tolerance.

Mr. BUCSHON. Right.

Dr. DUPONT. And that's true for these other drugs. It's true for marijuana.

Mr. BUCSHON. So we got a ways to go to try to determine—for example, in this—

Dr. DUPONT. You can't do it with a tissue—

Mr. BUCSHON [continuing]. In this particular case, this person's attorney is arguing that they were not impaired and there is no evidence that they were impaired other than the field sobriety tests and the opinion of the officer.

Dr. DUPONT. And we need to take that seriously along with the positive finding.

Mr. BUCSHON. Right.

Dr. DUPONT. That's what that—

Mr. BUCSHON. Anyone else have any comments?

Ms. Holmes, I see you want to comment.

Ms. HOLMES. Yes, sir. I would really just emphasize what Dr. DuPont just said and that's why I think everybody in the traffic safety field emphasizes training officers in both ARIDE or certifying them as DREs so that they can confidently identify the signs and symptoms of drug impairment and then be able to articulate that in court in a convincing manner, and that becomes a training issue.

So more appropriations for that type of law enforcement training is key.

Mr. BUCSHON. Makes sense. Thanks. My time is up. I yield back.

Mrs. WALTERS. The gentleman yields, and the chair recognizes the gentleman from New Jersey, Mr. Lance.

Mr. LANCE. Thank you, Madam Chairman, and I may be asking questions that have already been asked. We have had a series of hearings today and I apologize for not being at this hearing for all of its aspects.

I am from New Jersey and the new governor of New Jersey, Philip Murphy, wants to legalize recreational marijuana by the end of the year. This would occur through legislation at the state level in Trenton, our state capital.

I am open to expanding access for medicinal use of marijuana but I strongly oppose legalization for recreational purposes.

I am especially worried about the legalization of recreational marijuana's effects on our roadways. New Jersey is the most densely populated state in the Nation.

As has been previously stated, the number of American drivers killed in automobile accidents in which drugs have been detected, that number has surpassed those killed in accidents where only alcohol was found. At least that's my understanding of the situation.

Several states, of course, have already legalized marijuana for recreational use. To the distinguished and to each of you, could you please comment on trends or data that have been produced from the states that have legalized recreational marijuana as it relates to impaired driving?

And I will start with you, Dr. DuPont.

Dr. DUPONT. I don't have the data for comparing the states. So somebody else will have to answer that.

Mr. LANCE. Thank you very much.

Anybody on the panel who would like to respond to my question? Yes.

Ms. HARMON. I can speak to what we have seen in California. We legalized in 2016 but recreational sales did not go officially online until January of this year.

Currently, in our fatally injured drivers, we are in the range of 17 to 20 percent that are testing positive for the active drug found in marijuana, THC.

We do know that both Colorado and Washington, once they legalized, saw almost a doubling of their fatally injured drivers originally from the pre-legalization to post-legalization.

We are not sure yet what California is going to look like because that data is as of 2017. We do expect the numbers to increase in 2018 and 2019. But, again, we are waiting because the full access didn't go online until this year.

That being said, California had decriminalized marijuana since 1996 so our numbers may not be as substantial as Colorado and Washington.

Mr. LANCE. And, of course, there is a difference between decriminalization and legalization, as I understand it, and this debate is now occurring in New Jersey.

But without final figures, it's your view, at least in California, that, unfortunately, tragically, the number of fatalities will increase or have increased as a result of this change in legislation?

Ms. HARMON. Yes, and we are seeing an increase in drug-involved fatalities.

Mr. LANCE. Others on the panel?

Ms. SHEEHY-CHURCH. I would say that, in terms of the statement marijuana being ahead of alcohol is not true.

Mr. LANCE. Yes.

Ms. SHEEHY-CHURCH. But what I would agree with is that we are seeing a rise. I have my own opinion relative to marijuana, whether it's medicinal or that it's not.

Mr. LANCE. I seek your opinion. That's why you're on the panel.

Ms. SHEEHY-CHURCH. Yes, I won't—

Mr. LANCE. And that's why I've asked everybody on the panel to comment.

Ms. SHEEHY-CHURCH. I still think, though, that, speaking for MADD, that what we have to do is stick with our model that does work—

Mr. LANCE. Yes.

Ms. SHEEHY-CHURCH [continuing]. And what works is exactly what Ms. Harmon says that we—and Ms. Holmes says is really looking at our—is our law enforcement being the first step, as putting the tools in the toolbox that they need so that they can better understand and stop the fatalities.

These are accidents, by the way. These are crashes, because a crash is something that is done that could have been 100 percent preventable.

Mr. LANCE. I see. My staff used the word crash. I changed it to accidents. So that's my fault, not the fault of my very competent staff.

Ms. SHEEHY-CHURCH. It's OK.

Mr. LANCE. Ms. Holmes.

Ms. HOLMES. I'll very briefly speak to Washington State.

Mr. LANCE. Yes.

Ms. HOLMES. AAA FTS did a study that looked at trends both pre- and post-legalization for drivers testing positive for active THC and they found an increase from 8 to 17 percent.

Mr. LANCE. So that's double.

Ms. HOLMES. Washington Traffic Safety Commission has also done a lot of data analysis and the recent data shows that the

number-one impairing substance in their fatal crashes is actually poly use, so either a combination of alcohol and drugs or multiple drugs on board, which is what we are primarily concerned about.

Mr. LANCE. I thank you and I thank the distinguished panel.

And let me reiterate that it is my considered judgment, and I was the minority leader in the state senate in New Jersey before coming here, that it is not good policy, at least for our state, to legalize recreational marijuana.

I thank the chair.

Mrs. WALTERS. The chair recognizes the gentleman from Florida, Mr. Bilirakis.

Mr. BILIRAKIS. Thank you. Thank you, Madam Chair. I appreciate it very much.

Ditto what the gentleman from New Jersey says as far as recreational marijuana as well. Yes, what's the—I have some questions here and I want to go through it.

But what is the drug that—besides alcohol and maybe marijuana too that is—impairs the individual the most? Can you point to one particular drug with regard to driving?

Ms. SHEEHY-CHURCH. I cannot answer that question if there is one over another. Impairment is impairment and different drugs, whether they are prescription or illicit, will react to an individual differently all the time.

So I don't know whether anybody else has the data.

Dr. DUPONT. I don't think you'd find one drug that would stand out. Those are the two that are most prevalent. But there are lots of other drugs—methamphetamine, for example, cocaine, and all the new synthetic drugs.

So it's an incredibly long list, and all of them are impairing. There aren't any drugs that aren't impairing.

Mr. BILIRAKIS. Yes, and also, if you take the drugs legally—the prescribed—they could interact with each other and that's very important that we get the word out.

How do you propose getting the word out besides the doctors telling the patients, look, you absolutely should not drive when you're under the influence, even though it's legally prescribed, for example, pain medication or what have you?

Do you all have any suggestions on that?

Ms. HOLMES. I think in addition to physicians, also pharmacists. I think one of the things that we would certainly recommend to safeguard against opioid-impaired driving, particularly when we are talking about prescriptions used according to therapeutic doses, is to really make sure that at that point of contact where the patient is prescribed a new medication with impairing side effects that both the physician and pharmacists are having a conversation with that patient that very clearly outlines that they should not be operating heavy machinery and that a vehicle constitutes having machinery. We are not just talking about crane operators.

Mr. BILIRAKIS. That's right.

Ms. HOLMES. But I think sometimes that doesn't occur and sometimes that fine print warning label is simply not sending a strong enough message.

Mr. BILIRAKIS. Yes. I agree. I agree.

Anyone else want to comment on that?

Dr. DUPONT. I think one of the things that's striking is that people often don't know they are impaired.

Mr. BILIRAKIS. Yes.

Dr. DUPONT. When people do know they are impaired, that's, clearly, a sign to say if you feel impaired—if you feel high, don't drive. That's clear.

Mr. BILIRAKIS. Yes.

Dr. DUPONT. The problem is that a lot of people feel just fine or even feel they are driving better when they are impaired and I think that makes it very difficult to say you're going to educate them about it.

I think the answer is really to not drive after you use drugs.

Mr. BILIRAKIS. Exactly.

Dr. DUPONT. But with respect to prescription drugs, I often prescribe myself medicines that are potentially impairing. When you start with a drug that is potentially impairing you want to be very concerned with that with a patient.

Once they are on a stable dose, usually it's not a problem unless they add something else to it.

Mr. BILIRAKIS. And that's the thing. The mixture of alcohol and a drug, whether it's marijuana or what have you.

Dr. DUPONT. To be sure, it can be very disturbing. But it becomes difficult to communicate that because the same drug as I use in my methadone example—the same dose of the drug, which is nonimpairing for a person who's used to it is very impairing to a person who isn't, and that makes it difficult to broaden these bright lines that people want to have.

Mr. BILIRAKIS. Yes, I know. We got to get the message out. But you're right, everybody's different.

So earlier this year, there was an article in our local newspaper in Pasco County, Florida—the Laker/Lutz News—that shared a tragic story of a constituent, a couple whose daughter and family were, sadly, killed by a drug-impaired driver.

I'd like to insert that the article in the record, Madam Chair, please. I'd like to insert that into the record.

Mrs. WALTERS. So without objection.

[The information appears at the conclusion of the hearing.]

Mr. BILIRAKIS. Thank you.

These parents have since become strong advocates for raising awareness and education about drugged driving and I personally met with them and heard their heartbreaking stories.

It highlights the urgency that we have today to address this issue and reverse the trends we have been seeing over the past few years.

And, again, I have one other question here. Dr. DuPont, your testimony talks about the essential element of public education to help reduce drug-impaired driving.

We are all aware of the don't drink and drive messaging that has been effective over the years. You say we should have an equivalent don't use drugs and drive messaging as well and that it should be backed by clear policies and enforcement.

What should these policies look like at the Federal level to help with an education initiative? And I did see something the other day

on TV, and I am not exactly sure what this means because I am 55 years old, but don't be baked and drive.

So but anyway, if you could answer that question for me I'd appreciate it.

Dr. DUPONT. The don't be high and drive is what people in the marijuana field talk about and I think that's good advice not to be high and drive.

I think that that's good. But I like the don't use drugs and drive, to be clear, and I think once you get past that, you get into very murky waters about safety.

Mr. BILIRAKIS. OK. You also mentioned the additional concern regarding prescription drugs. I don't have time.

All right. Well, I'll enter it into the record and I appreciate it, Madam Chair. Thank you. I yield back.

Mrs. WALTERS. The gentleman yields.

I am going to recognize myself for 5 minutes. As we have heard in Ms. Harmon's testimony, my home of Orange County, California, is a national leader in the fight against drug-impaired driving.

The alarming statistic that more Americans are killed in crashes in which drugs are detected compared to those which alcohol was found are reflected in the fact that Orange County saw a 40 percent increase in drug-impaired driving submissions to the crime lab from 2015 to 2016.

In response, the OC crime lab and DA have developed a multi-agency drug-impaired driving initiative focusing on investigation, prosecution, and toxicology examination.

The OC model serves as the foundation for California statewide drug-impaired driving model and the district attorney coordinates training for all of southern California.

These local and state initiatives must be in collaboration with Federal efforts and I am assured knowing that former Orange County resident Deputy Administrator Heidi King is executing NHTSA's drugged driving initiative.

Last Congress, we enacted the FAST Act, which included language I championed that required NHTSA to study marijuana-impaired driving and how it affects individuals while driving, and I would like to submit the report for the record.

[The information appears at the conclusion of the hearing.]

Mrs. WALTERS. The state also authorized NHTSA to work toward a roadside test for impairment.

Ms. Harmon, you mentioned the OC crime lab studies, roadside saliva testing, and other field test options. Can you further describe the challenges in developing an effective field test and the progress made toward that goal?

Ms. HARMON. So we have done a couple of studies. We have published in 2016 and 2018 of this year where we looked at—we went back and looked at drivers with active THC in their system and looked at the current field work that's being done by law enforcement—the standardized field sobriety tests and the drug recognition expert program—and our studies concluded that although you can't correlate to a level of impairment, the current tools that law enforcement is using are very effective of finding THC-impaired drivers.

Of the additional work that we have done, we did a pilot study with the Fullerton Police Department, looking at roadside saliva testing and the effectiveness of that testing versus our blood collection model that we have had in our county.

We have contract phlebotomy for over 30 years, which allows us to reduce the time frame in which the blood is actually collected and how it's submitted to the laboratory and tested, and what we found is that the roadside saliva model testing is effective for illicit drugs—methamphetamine, heroin.

It was OK for marijuana and it was not effective for prescription drugs. In Orange County, we have our third most prevalent drug—with the exception of including alcohol—is benzodiazepine, which is Xanax, which this would exclude many of those cases if we went to a roadside saliva model.

So we continue to advocate that if we can get effective blood collection that it is a matrix that we can work with and that we already have literature that supports what levels are therapeutic, what levels are toxic, and what levels are fatal, which we can provide during testimony in drug-impaired driving cases.

Mrs. WALTERS. What can Congress do to help develop an effective field test?

Ms. HARMON. I think what's really needed is that we have effective tests and so what we really need from Congress is support in doing that.

The standardized field sobriety tests model that law enforcement is using is not mandated in police academies.

The California Highway Patrol mandates that this class—it's 40 hours of training for every one of their officers. They also mandate the 16-hour ARIDE, which Ms. Sheehy-Church had mentioned before.

They also mandate that 16-hour class as well. And, again, these are classes that are not mandated of all folks who are in law enforcement now.

The additional thing is that the testing component needs to be available. The toxicology labs need to have the resources.

Much like what the Federal level has done for DNA, they need to do that for toxicology, and it will enhance any type of case work that involves drugs if those models are used, and ensuring that the laboratories actually have the resources they need to test all drivers and to test decedent drivers for the drugs that may be in their system.

Mrs. WALTERS. OK. And you said according to the DA marijuana and prescription drugs that count for the majority of drug-impaired driving cases in Orange County and you mentioned the crime lab will soon begin testing for over 300 drugs in every traffic safety related case.

Can you explain what factors led the crime lab to expand the types of drugs tested?

Ms. HARMON. We expanded the testing because this is what we are seeing. We did a proof of concept research project a couple of years ago and saw that over 30 percent of drugs were being missed in our cases.

So we have led efforts over the last several years to become more comprehensive in the testing that we do because many of our cases are, as already reflected by this panel, poly pharmacy cases.

As I mentioned, over 40 percent of our nonalcohol DUIs have three or more drugs in their system. We want to be able to give a comprehensive picture on the data that's being provided.

Mrs. WALTERS. OK. Thank you, and I am out of time.

Ms. SCHAKOWSKY. Can I ask one more?

Mrs. WALTERS. Sure. I'll yield to the gentlelady.

Ms. SCHAKOWSKY. Thank you, Madam Chair. I really appreciate it.

So I am trying to—what you said, Dr. DuPont, about different people having different levels of tolerance.

Now, we set .08. I am assuming that someone like me, who's a horrible drinker—probably one little glass of wine and I might be impaired—I don't know—but yes, we set a firm level.

What you were saying, can we set levels that are just for everyone for these other drugs, for these other—for marijuana, et cetera, because I would think that otherwise it's impossible to define what's impaired and what isn't.

So I don't know. Whoever wants to answer that but—

Dr. DUPONT. Well, I think the answer is no, you can't do that, and let me just mention about with alcohol. It's not as clear cut as you may think that somebody who's under .08 is not impaired and somebody who is over .08 is. That's called a per se standard.

There are many people who are alcoholics who are above .08 and they pass the field sobriety tests. There are other people who are under .08 who fail the field sobriety tests. And you can see this very easily from some of the field sobriety data that when people—if you look at the people who fail on alcohol, the average level is not .09.

The average level is .15, because many people who are heavy drinkers can pass the field sobriety tests.

So what I am saying is this is a political decision what the number is. It's not a science decision, and—

Ms. SCHAKOWSKY. But there is a practicality about it, too.

Dr. DUPONT. It's very important. It's a wonderful thing.

Ms. SCHAKOWSKY. Yes.

Dr. DUPONT. I am in support of it. But not to understand the science behind it leads you to want to find that for other drugs and I am telling you you can't do it—what's happening now, which is tragic, is that the search for that tissue level for other drugs is stopping us from doing the things we can do right now.

We say we have got to wait for that. We have got to have new research. That is very destructive to say that sure, let's have more research.

But let's do the things we can do now—there is lots of things to do, and the field sobriety test is a wonderful test. It does detect the impairment very well.

Ms. Harmon was talking to me—when they fail the field sobriety tests, 96 percent of the people have drugs or alcohol present. That tells you that field sobriety test is a very good test. You don't need another test. That test is good.

Let's use it right now. Yes, do more research. But use what we have got now because what we have got now is good, and what's happening in Orange County is a model for the country.

Ms. SCHAKOWSKY. OK. Is there any difference of opinion to weigh in at all? OK. Did you want to?

Ms. SHEEHY- CHURCH. There is no difference of opinion. I absolutely agree with the doctor.

Ms. SCHAKOWSKY. Ms. Holmes as well?

Ms. HOLMES. Yes, and to that, I would add that we already have impairment-based laws in every single state, which is why that somebody who's impaired with below .08 can be prosecuted for a DUI—similarly, for drugs.

So the emphasis really then should be making sure officers are, again, trained to be able to—

Ms. SCHAKOWSKY. OK.

Ms. SHEEHY-CHURCH [continuing]. Identify and articulate signs of impairment.

Ms. SCHAKOWSKY. OK. And Ms. Harmon, you're on board with that too? Yes?

Ms. HARMON. I agree completely.

Ms. SCHAKOWSKY. OK. Great. Thank you. That's helpful.

Mrs. WALTERS. Thank you. Seeing that there are no further members wishing to ask questions, I'd like to thank all of our witnesses for being here today and thank you for being patient with us while we had to go vote.

Before we conclude, I would like to include the following documents to be submitted for the record by unanimous consent: an article from the Heritage Foundation, a policymakers checklist from responsibility.org, a report from the governor's Highway Safety Association, a report from the Institute for Behavioral Health, an article from the Police Chief magazine, and an article from Impaired Driving Update.

[The information appears at the conclusion of the hearing.]

Mrs. WALTERS. Pursuant to committee rules, I remind members that they have 10 business days to submit additional questions for the record and I ask that witnesses submit their response with 10 business days upon receipt of the questions.

Without objection, the subcommittee is adjourned.

[Whereupon, at 3:21 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

7/11/2018

Raising awareness about drugged driving

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JULY 11, 2018

Raising awareness about drugged driving

 February 7, 2018 By Kevin Weiss [Leave a Comment](#)

A case of drugged driving forever changed the lives of parents Joey and Tammy Leonard.

Now their mission is to ensure other families don't experience the same anguish they must handle every day.

On Oct. 12, 2015, the Leonards lost their daughter, Kassidy Leonard, her husband, William Griggs, and their 12-day-old baby granddaughter, Kimberlyn Dawn Griggs, after a horrific head-on collision with an impaired driver in Tennessee.

The driver, Benjamin Franklin, then 28, had crossed over the road into the oncoming lanes and struck Grigg's vehicle on State Highway 13 in Houston County, Tennessee.

The young family was instantly killed.

Franklin, who was under the influence of oxycodone, methamphetamine and amphetamines at the time of the crash, survived.

He was later sentenced to 36 years in prison for vehicular homicide.

"We say we received a life sentence, because of a senseless, preventable act of a grown man. It's difficult for us to understand," said Joey Leonard, associate dean of academic affairs and retention services at PHSC's East Campus.

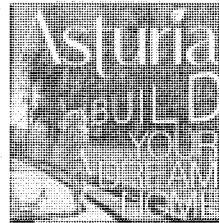
The Leonards shared their personal story during a panel discussion on drugged driving prevention at the Pasco-Hernando State College East Campus in Dade City.

Topics centered on the consequences of impaired driving, along with the risks of illegal and prescription drug use while operating a motor vehicle. Law enforcement and medical professionals weighed in.

The Jan. 30 event was part of the college's ongoing Community Awareness Series available to community members, students, faculty and staff.

The Issues

The National Institute of Drug Abuse says the use of illicit drugs or misuse of prescription drugs can



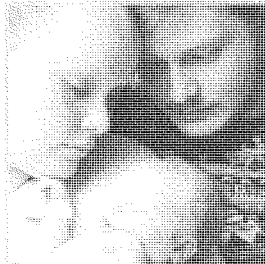
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Kassidy Leonard, her husband, William Griggs, and their 12-day-old baby daughter, Kimberlyn Dawn Griggs, were killed by a drug impaired driver in October 2015. Kassidy's parents, Joey and Tammy Leonard, shared their personal story during a driving prevention seminar at the Pasco-Hernando State College East Campus in Dade City. (Courtesy of Joey and Tammy Leonard)

7/11/2018

Raising awareness about drugged driving

make driving a car unsafe — just like driving after drinking alcohol — putting the driver, passengers and others who share the road at risk.

The effects of specific drugs differ depending on how they act in the brain, according to the organization.

For example, marijuana can slow reaction time, impair judgment of time and distance, and decrease coordination. Drivers who have used cocaine or methamphetamine can be aggressive and reckless when driving. Certain kinds of sedatives, called benzodiazepines, can cause dizziness and drowsiness.

Drugged driving is widespread nationally.

According to the 2016 National Survey on Drug Use and Health (NSDUH), 11.8 million people age 16 drove under the influence of illicit drugs in 2016, the latest data published on the topic.

Approximately 21 percent of the 31,666 fatal crashes in the U.S., in 2015 involved at least one driver who tested positive for drugs after the incident, according to federal data released to USA TODAY and interviews with leaders in the field.

In Florida, there were 281 drug-related crash fatalities in 2015. That figure has risen every year since 2010, when 109 drug-related crash fatalities reported.

Panelists extensively pinpointed the use of marijuana.

Each warned students about the risks, especially when operating a vehicle.

"Marijuana alters your judgment, and it's something you shouldn't be doing before you get behind the wheel of a car," said panelist Jessica Boh, who's in her final year at the University of Florida's College of Pharmacy.

Pasco Sheriff deputy Barry Nixon, another panelist, many times has witnessed the effects of those driving under the influence of marijuana.

Nixon explained many of his marijuana-related DUI arrests have been those traveling over 100 miles per hour, usually in a 45 mph zone.

"When you smoke marijuana, your heart rate goes up, your pulse goes up," Nixon said.

"The impairment effects can last in your body for 24 hours. Just like with pain medication or anything, you don't know how long it's going to affect you or what it's going to do. You don't know what it does for you."

Recreational drugs aren't the only problems, however.

Drugged driving can also extend to over-the-counter medications and prescription medications, Boh explained.

"The reality is, any medication can affect your ability to drive," she said.

Her advice is to read prescription labels and consult a pharmacist on how different drugs can affect driving and how it may interact with other medications.

"It's your responsibility to know whether or not those medications impair you," Boh said.

"If it makes you dizzy or lightheaded, it's probably not a good idea to take it and then get behind the wheel of a car. There's a lot of dangerous interactions that can happen with over-the-counter medications and prescription medications."

Seeking solutions

The topic of drug culture also was discussed during the event.

Panelist James Lear set the blame on pop culture, particularly for negatively influencing millennial by glamorizing drug use.

WHAT'S HAPPENING

07/03/2018 – Nation Celebration

Connerton, 21100 Fountain Garden Way in Land O' Lakes, will host its annual "Nation Celebration" July 3 from 5 p.m. to 9 p.m. There will be a rock wall, free games, fireworks, live music, food trucks, local crafters, free bounce houses, a \$250 gift card giveaway, and fireworks sponsored by Benedetto's Ristorante Italiano. Register online at Connerton.com/event-signup, to be eligible for gift card drawing. ... [Read More...]

07/03/2018 – Red, White & Brew

The Lake House, 1201 Kenlake Ave., in Spring Hill, will host "Red, White & Brew" July 3 from 4 p.m. to 11 p.m. There will be live music, craft beers, fireworks, a vendor showcase, food vendors, a salute to veterans and more. Guests can bring their own chairs or blankets, but no outside food or drinks. For information, call Hits 106 at (727) 697-1063. ... [Read More...]

07/04/2018 – Avalon's Independence Day

Avalon Park West in Wesley Chapel will host an Independence Day celebration on July 4 from 5 p.m. to 9 p.m., at its clubhouse, at 5227 Autumn Ridge Drive. There will be an apple pie bake-off, a bike parade, a wet/dry bounce park, community performances, and fireworks at 9 p.m. Admission is free. For information, call (813) 783-1515. ... [Read More...]

07/04/2018 – Cardboard Boat Regatta

The Seven Oaks Clubhouse, 2910 Sports Core Circle in Wesley Chapel, will host a "4th of July Celebration & Cardboard Boat Regatta" on July 4 from 10 a.m. to 3 p.m. Families can build a two-person cardboard boat and celebrate our freedom. The two people must be able to race in the boat. There will be awards for fastest, best team, most creative, people's choice, best younger team and the Titanic-best sinking. For information, visit 813Area.com. ... [Read More...]

07/04/2018 – Rhythm-n-Brews

<http://lakerlutznews.com/ln/?p=54161>

2/6

7/11/2018

Raising awareness about drugged driving

Lear is a medical consultant at Becton Dickinson and has worked in the pharmacy industry for nearly 30 years, with expertise in a drug diversion programming.

"Shun pop culture," Lear said. "Find somewhere else to find your values from."

Lear also urged students to look out for each other and not fall into the peer pressure of abusing drugs and alcohol.

In the event of drug or alcohol use, he advised students to call a cab or ride-sharing service, like Uber or Lyft, instead of getting behind the wheel. "There's no excuse to not make sure you have a safe way home," he said.

Lear also encouraged students to get involved in their community and local politics to influence regulatory measures on public safety issues.

"Change your world. Change the way you live in it, and be an influence for good," Lear said.

Since that tragic day in 2015, the Leonard family created a website, StopDruggedDriving.net, to educate and raise awareness about drugged driving and drugged driving fatalities, as well as provide resources for those struggling with addiction. They've also been advocates for strengthening penalties for drugged driving.

"Our prayer is that one day drugged driving will cease to exist and other families will never have to put up with the tragic loss of loved ones that we have," Tammy Leonard said.

For more information, visit StopDruggedDriving.net.

Published February 7, 2018

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The second annual Fourth of July party at Rhythm & Brews, 4711 Gall Blvd., in Zephyrhills, will be on July 4 from 2 p.m. to 10 p.m. Food will be provided by Flaming Q BBQ and Rhythm & Brews. There also will be beers from local brewers, and wine. Live band music will begin at 2 p.m., with a lineup for the entire day of festivities. Tickets are \$10 in advance and \$15 the day of the event. For information, visit Rhythm-n-brews.com or Facebook.com/RhythmBrewsZephyrhills. ... [Read More...]

07/04/2018 - Sparklebration

The annual "Sparklebration" celebration will be July 4 from 4 p.m. to 10 p.m., at the Pasco County Fairgrounds, 36722 State Road 52 in Dade City. There will be live entertainment, free face painting, and for a nominal charge: a bounce house, pony rides and a petting zoo. There also will be a watermelon- and hot dog- eating contests, and a karaoke contest. Fireworks are scheduled for 9:15 p.m., weather permitting. Gates open at 4 p.m. Parking is \$5 per vehicle. Admission is \$6 for ages 13 and older. For information, visit PascoCountyFair.com. ... [Read More...]

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Marijuana-Impaired Driving

A Report to Congress



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Marijuana-Impaired Driving

A Report to Congress

Introduction

This report has been prepared in response to a requirement in Section 4008 (Marijuana-Impaired Driving) of the Fixing America's Surface Transportation Act (FAST Act), Pub. L. 114-94. This section states:

SEC. 4008. MARIJUANA-IMPAIRED DRIVING.

(a) *STUDY.*—The Secretary, in consultation with the heads of other Federal agencies as appropriate, shall conduct a study on marijuana-impaired driving.

(b) *ISSUES TO BE EXAMINED.*—In conducting the study, the Secretary shall examine, at a minimum, the following:

- (1) *Methods to detect marijuana-impaired driving, including devices capable of measuring marijuana levels in motor vehicle operators.*
- (2) *A review of impairment standard research for driving under the influence of marijuana.*
- (3) *Methods to differentiate the cause of a driving impairment between alcohol and marijuana.*
- (4) *State-based policies on marijuana-impaired driving.*
- (5) *The role and extent of marijuana impairment in motor vehicle accidents.*

(c) *REPORT.*—

(1) *IN GENERAL.*—Not later than 1 year after the date of enactment of this Act, the Secretary, in cooperation with other Federal agencies as appropriate, shall submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the results of the study.

(2) *CONTENTS.*—The report shall include, at a minimum, the following:

(A) *FINDINGS.*—The findings of the Secretary based on the study, including, at a minimum, the following:

- (i) *An assessment of methodologies and technologies for measuring driver impairment resulting from the use of marijuana, including the use of marijuana in combination with alcohol.*
- (ii) *A description and assessment of the role of marijuana as a causal factor in traffic crashes and the extent of the problem of marijuana-impaired driving.*
- (iii) *A description and assessment of current State laws relating to marijuana-impaired driving.*
- (iv) *A determination whether an impairment standard for drivers under the influence of marijuana is feasible and could reduce vehicle accidents and save lives.*

(B) *RECOMMENDATIONS.*—The recommendations of the Secretary based on the study, including, at a minimum, the following:

- i) *Effective and efficient methods for training law enforcement personnel, including drug recognition experts, to detect or measure the level of impairment of a motor vehicle operator who is under the influence of*

marijuana by the use of technology or otherwise.

(ii) If feasible, an impairment standard for driving under the influence of marijuana.

(iii) Methodologies for increased data collection regarding the prevalence and effects of marijuana impaired driving.

(d) MARIJUANA DEFINED.—In this section, the term “marijuana” includes all substances containing tetrahydrocannabinol.

This report is organized to respond to the requirements stated above in Section 4008. It addresses the five issues to be examined, the four topics for which findings are to be provided, and concludes with the three areas where recommendations were required (if feasible).

First, a background section covers some critical information necessary for the reader to understand some of the complex technical issues that are the basis for the content that follows. This information is designed to provide a basic understanding of the process of absorption, distribution and elimination of alcohol and marijuana in the body, the time course for these processes, the effects these drugs have on driving-related skills, how drug testing is conducted, and the impaired driving detection process.

In 2009 the National Highway Traffic Safety Administration (NHTSA) issued a Report to Congress on Drug-impaired Driving (Compton, Vegega, and Smither, 2009) that addressed some of the same issues covered in this report and some of the material from that report is relevant here and is incorporated in this report.

Background

There is a large group of drugs that have the potential to impair driving and cause crashes. This larger body of drugs with the potential to impair driving consists of all psychoactive substances. Psychoactive substances include alcohol, some over-the-counter drugs, some prescription drugs, and most illegal drugs. The mechanism by which these drugs affect the body and behavior, the extent to which they impair driving, and the time course for the impairment of driving can differ greatly among these drugs.

Since the effects of alcohol on driving performance and crash risk are relatively well understood, it is useful to review and compare what is known about alcohol-impaired driving and marijuana-impaired driving as it clarifies some of the challenges and unknowns that pertain to marijuana-impaired driving. Alcohol-impaired driving has been a subject of intense interest and research for well over 60 years. There have been many studies conducted on the role of alcohol in contributing to traffic crashes starting in the 1950's. This research involved studies of alcohol-impaired driving related skills, primarily through laboratory studies involving subjects dosed on alcohol, using psychomotor tasks (reaction time, tracking, target detection), driving simulators and drivers on closed courses in instrumented vehicles, epidemiological studies including roadside surveys of alcohol use by drivers, and studies of alcohol use by crash-involved drivers. This research built a persuasive case that alcohol was a significant contributor to traffic crashes. For example, in the 1950's it was estimated that alcohol-positive drivers were involved in approximately 50 percent of fatal crashes (involving over 25,000 fatalities per year), while the latest data available shows that alcohol-related fatal crashes have declined to around 30 percent (involving over 10,000 fatalities per year). In the 1960's research was able to estimate the crash risk of drivers at different alcohol concentration levels.

In the ensuing decades extensive efforts were taken to reduce the harm caused by alcohol use by drivers. These efforts included strengthening laws against alcohol-impaired driving, public education efforts about the dangers of driving after drinking, development of tools to assist law enforcement in detecting and arresting impaired drivers, and the prosecution of alcohol-impaired drivers. This included the development of the Breathalyzer and subsequent more sophisticated methods of measuring alcohol concentration in the breath. Laws were enacted that made specific alcohol concentrations presumptive of impairment; subsequently laws were passed that made it a crime to drive with an alcohol level at, or above a specified level (known as “illegal Per Se” levels). To address the deliberate pace often encountered in the criminal justice system many States adopted “administrative per se” laws that allowed for the almost immediate suspension or revocation of the driver license for persons operating a motor vehicle with an alcohol concentration above a specified level.

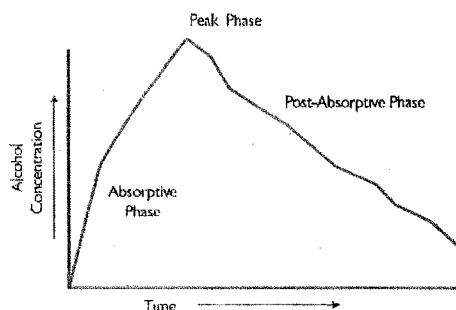
Much of this progress in addressing the harm caused by alcohol-impaired driving and the public’s understanding of this problem derives from the pharmacokinetics (the absorption, distribution and elimination of a drug from the body) and pharmacodynamics (how a drug affects physiological process and behaviors). These processes differ, often substantially, for other drugs, including marijuana. Understanding these differences is critical to understanding how marijuana-impaired driving differs, and the impact these differences will have on efforts to reduce the harm from drug-impaired driving.

When one consumes alcohol (typically in a drink) it is readily absorbed into the blood system in the gastrointestinal tract. While there are factors that influence this process (e.g., presence of food) it occurs in a fairly regular fashion over time. The peak blood alcohol concentration is generally reached within about 20 minutes after the cessation of drinking. The process of eliminating alcohol from the body starts almost immediately upon its entry into the blood system. This process takes place primarily in the liver. Most doses of alcohol overwhelm the quantity and capacity of the enzymes that break it down, so that alcohol is removed from the bloodstream at an approximately constant rate. The elimination of most other drugs from the body occurs at a rate proportional to the current concentration, so that they exhibit exponential decay. This means the elimination occurs most rapidly when higher concentrations are present and slows down when less of the drug is present.

This fairly steady rate of elimination of alcohol occurs regardless of the concentration of alcohol in the blood. The rate is influenced by a number of factors (e.g., the health of the liver, experience consuming alcohol). Thus, the peak BAC reached after consumption of a specific quantity of alcohol depends primarily on the rate and amount of alcohol consumed, as the rate of elimination is fairly constant. It should be noted that alcohol readily passes through the blood-brain barrier (that prevents many harmful substances in the blood from entering the brain). See Figure 1 for a graphic display of this process of absorption and elimination of alcohol (adapted from APRI, 2003).

When one compares the effects of consuming alcohol on behavior (balance, coordination, reaction time), attention (divided attention, vigilance), cognition (decision making), and other propensities like risk taking and judgement, one finds that observed impairment in these functions correlates fairly well with alcohol concentration (in the blood or breath). Impairment increases with rising alcohol concentration and declines with dropping alcohol concentration. This correlation between alcohol concentration and impairment has allowed the use of alcohol concentration (BAC- blood alcohol concentration or BrAC – breath alcohol concentration) to be used to infer the degree of impairment caused by the consumption of alcohol. The higher the BAC or BrAC the greater the impairment one will find. This well-established relationship has provided the basis for laws prohibiting driving with high BACs.

FIGURE 1
General Alcohol Concentration Curve



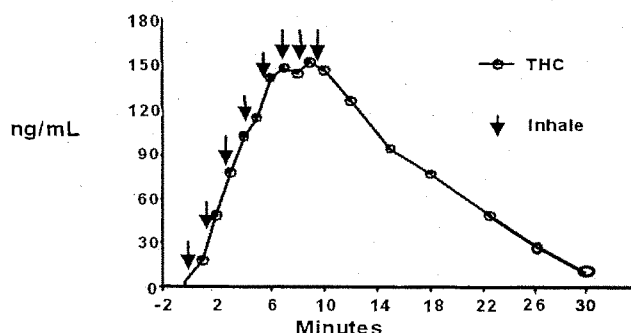
In summary, ethyl alcohol is a relatively simple drug whose absorption, distribution and elimination from the body along with the behavioral and cognitive effects are fairly well documented.

In comparison, the absorption, distribution and elimination from the body of marijuana (and many other drugs), along with the behavioral and cognitive effects is very different from the case with alcohol. The term marijuana refers to the plant known as marijuana (*cannabis sativa*). The typical way in which marijuana is consumed has been through smoking the plant material (leaves, flowers, seeds and stem), though other means of ingestion have been used, like through eating food products laced with an active ingredient of marijuana. The use of edible marijuana products has been increasing in recent years and presents some interesting new challenges that will be discussed briefly later in this report.

The primary psychoactive substance in marijuana is delta-9-tetrahydrocannabinol (THC). THC is one of over 500 known compounds in the cannabis plant, including more than 80 other cannabinoids. THC is associated with the psychoactive effects of ingesting marijuana plant material. THC has been shown to bind with receptors in the brain (and to a lesser extent in other parts of the body) and it is likely that this process underlies some of the psychoactive (behavioral and cognitive) effects of marijuana use.

While ethyl alcohol is readily soluble in water, and hence blood, THC is fat soluble. This means that once ingested, THC is stored in fatty tissues in the body and can be released back into the blood sometimes long after ingestion. Some studies have detected THC in the blood at 30 days post ingestion (Heustis, 2007). Thus, while THC can be detected in the blood long after ingestion, the acute psychoactive effects of marijuana ingestion last for mere hours, not days or weeks. Also, unlike alcohol, which is metabolized at a steady rate, the metabolism of THC occurs in a different fashion such that THC blood levels decline exponentially. Some studies have reported a fairly wide variability that is affected by the means of ingestion (smoking, oil, and edibles), potency, and user characteristics. Most research on the effects of marijuana has used smoking and often do not measure the concentration of THC in the blood.

Figure 2
Absorption of THC in Plasma after Smoking



Note: Whole Blood THC is less than Plasma THC

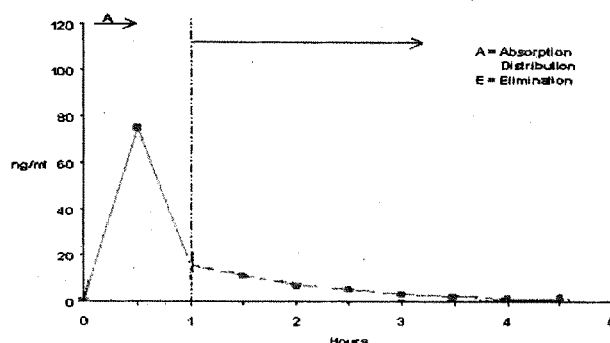
Figure 2 (above) shows a generalized example of the absorption of THC in the blood (plasma) after smoking a marijuana cigarette (Heustis, 2007; Huestis, Hemmingfield, Cone, 1992). Blood plasma is whole blood with the blood cells removed, in other words just the liquid portion of whole blood (serum is plasma without clotting factors). Note that THC is detectable in the blood within a minute or so after the initiation of smoking. The peak THC level occurs at the end of smoking or immediately after cessation (depending on the rate and duration of inhalations). THC levels drop rapidly after cessation of smoking. In contrast to alcohol, which is metabolized at a relatively steady rate, THC is metabolized at an exponentially declining rate where the THC blood level first drops rapidly, followed by a slower decline as lower THC levels are reached. As seen in Figure 2, within 30 minutes the THC level has dropped to 80 – 90 percent of the peak level. After a few hours only low or no THC can be detected in the blood. Very low THC levels may persist in the blood from a single administration for more than six hours.

While peak THC levels occur right after smoking ends, when alcohol is ingested by drinking, a peak BAC level in the blood or breath does not occur until sometime after the last drink is consumed. As mentioned above, alcohol primarily is absorbed into the blood (and hence into the lungs) through the gastrointestinal tract. Depending on a variety of factors it can take 20 minutes or more before alcohol is detectable in the blood or breath. The peak BAC level is dependent on the rate of intake and the rate of elimination. For the average person BAC is eliminated at a steady rate of approximately .015 BAC per hour. Thus, someone with a peak BAC of .16 would still have detectable alcohol in their blood ten hours later.

Figure 3 (below) shows the time course for THC in plasma after smoking over a longer period of time (Berghaus 1998; Chester 1995). When a driver's blood sample is collected, either because of a crash or if they are stopped by police for suspicion of impaired driving, the collection almost always occurs hours after ingestion has ceased. Often, time passes between the cessation of smoking and the beginning of driving, and more time passes between the beginning of driving and the encounter with law enforcement officials. Yet more time passes between the beginning of this encounter and point in time when blood is drawn (often after a search warrant is obtained for driving under the influence of drugs or

Figure 3

Time Course of THC Concentration in Plasma after Smoking Marijuana
[15mg THC in a 70kg person]
 (Adapted from Berghaus et. al. 1998 and Chester 1995)



after the driver has been transported to a hospital post-crash). Thus, the likely THC level detectable in such a blood sample will be relatively low.

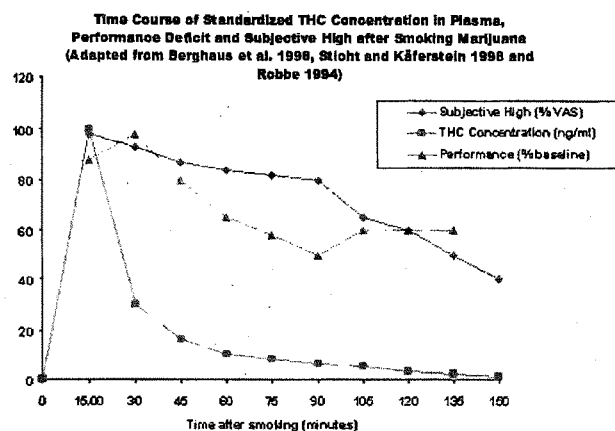
It was mentioned above that the effects of alcohol consumption on behavior, judgement, cognition and emotions all correlate fairly well with the rise and fall of alcohol concentration in the body as measured by blood alcohol concentration and breath alcohol concentration. This has been well established through a large number of carefully controlled studies in which subjects were dosed with alcohol and had their BAC or BrAC measured repeatedly while they performed a variety of tasks over time (see US DOT, 1991). The higher the alcohol concentration the greater the impairment that was observed. As alcohol concentration rose so did the degree of impairment; as alcohol concentration declined so did the degree of impairment.

Unlike alcohol, marijuana is classified as a Schedule I substance under the Controlled Substances Act. A much smaller number of studies have looked at the impairing effects of marijuana use on driving-related skills. Less is known about these effects due in part to the typical differences in research methods, tasks, subjects and dosing that are used. A clearer understanding of the effects of marijuana use will take additional time as more research is conducted. The extra precautions associated with conducting research on a Schedule I drug may contribute to this relative lack of research. For example, these include the need for a government license to obtain, store and use marijuana, the security requirements for storage, and documentation requirements and disposal requirements.

While fewer studies have examined the relationship between THC blood levels and degree of impairment, in those studies that have been conducted the consistent finding is that the level of THC in the blood and the degree of impairment do not appear to be closely related. Peak impairment does not occur when THC concentration in the blood is at or near peak levels. Peak THC level can occur when low impairment is measured, and high impairment can be measured when THC level is low. Thus, in

contrast to the situation with alcohol, someone can show little or no impairment at a THC level at which someone else may show a greater degree of impairment.

Figure 4



While high levels of THC are detected in the blood (and oral fluid) during and right after smoking, they are not typically observed an hour or two later. In cases of traffic crashes or arrests for impaired driving, it is most likely that only relatively low levels of THC will be found by the time an oral fluid or blood sample is obtained. Low THC levels of a few nanograms per milliliter (ng/ml) in blood can result from relatively recent use (e.g., smoking within 1 – 3 hours) when some slight or even moderate impairment is likely to be present, or it can result from chronic use where no recent ingestion has occurred and no impairment is present.

Figure 4 above shows this lack of clear correspondence between THC level in plasma and impairment (also subjective reports of being “high”) in subjects who ingested marijuana through smoking (Ward, N.J. and Dye, L. 1999). As expected, the peak THC level is reached soon after smoking ends. However, peak performance deficits are observed long after the peak THC level occurs. In fact, peak impairment occurs at 90 minutes after smoking while the THC level has declined over 80 percent from the peak level at that point in time. Notice also that the subjectively reported “high” also does not correspond well with blood plasma THC concentration. THC level in blood (or oral fluid) does not appear to be an accurate and reliable predictor of impairment from THC. Also, when low levels of THC are found in the blood, the presence of THC is not a reliable indicator of recent marijuana use.

The next two sections provide a brief overview of the impaired driving detection process and the drug testing process.

The Impaired Driving Detection Process

The detection of driver drug impairment typically takes place as a result of a law enforcement officer observing inappropriate driving behavior. The officer will stop the vehicle and engage the driver in conversation while the driver is inside the vehicle. The officer at this time may form a suspicion that the driver is impaired. This suspicion can be based on observations of driving behavior, the appearance of the driver (e.g., face flushed, speech slurred, odor of alcoholic beverages on breath), the behavior of the driver, and any statements the driver has made about alcohol or drug use. If the officer suspects that the driver is impaired, the officer will request that the driver exit the vehicle, and the officer will proceed to conduct pre-arrest screening tests. This phase can include the use of the Standardized Field Sobriety Test (SFST), which helps the officer determine whether the driver is impaired by alcohol and if the driver's BAC or BrAC is likely to be above the legal limit (Compton, et. al., 2009; Jones, et. al., 2003).

Based on this information, the officer may place the driver under arrest for suspicion of impaired driving. At this point, the officer will request a breath or blood sample for alcohol concentration testing – most typically a breath sample, but blood or urine samples could also be requested. If the suspect agrees to take an alcohol concentration test the officer will, in a jurisdiction that uses breath alcohol testing, take the offender to a booking location where the sample will be requested, for example, for an evidential breath test. However in many instances, the officer may obtain the sample at roadside in the patrol vehicle or in a mobile testing van or similar setting, if an evidential breath test device is available in the field. In a jurisdiction in which blood alcohol testing is used, the officer will typically obtain a search warrant and transport the driver to a medicinal facility where a blood sample can be drawn. In some cases the driver may be transported to a booking facility if a nurse or phlebotomist is available. In a few jurisdictions law enforcement officers are trained and licensed as phlebotomists and can draw the blood sample themselves. A recent U.S. Supreme Court case decision said that warrantless blood tests of alcohol concentration are not generally allowed (*Missouri v. McNeely*, No. 11–1425, decided April 17, 2013), although warrantless breath alcohol tests are generally permissible as they are less intrusive than blood tests of alcohol concentration (*Birchfield v. North Dakota*, No. 14–1468, decided June 23, 2016).

While there are cases where an impaired driver exhibits signs and symptoms not indicative of alcohol consumption, most often driver impairment is from alcohol, and thus the officer will typically begin by testing this possibility. When the BAC test results are incompatible with the observed impairment, then the officer will consider drugs other than alcohol as the likely cause of the observed impairment. Typically, if the suspect is found to be under the influence of alcohol, especially when the BAC is at, or above, the legal limit, the investigation stops at that point, even if the officer has reason to suspect that the use of other drugs is contributing to the suspect's impairment.

There are several disincentives for investigating potential impairment due to drugs other than alcohol when BAC evidence clearly shows an illegal alcohol level. Generally, the alcohol charge meets the burden of proof and State laws typically do not have additional penalties for multiple substance impairment.

However, if impairment is observed and BAC tests are negative, officers can seek additional evidence to support a drug-impaired driving charge. In jurisdictions that participate in the Drug Evaluation and Classification (DEC) Program, the arresting officer may request an evaluation by a Drug Recognition Expert (DRE). This program, originally developed by the Los Angeles Police Department in the 1970's, trains officers to recognize the signs and symptoms of drug use as an aid to investigating suspected drug-impaired driving cases. The program is now managed nationally by the International Association of Chiefs of Police (IACP), with technical assistance from NHTSA. The DRE performs a drug

influence evaluation (DIE) on the suspected impaired driver in order to determine whether the observed impairment is likely to be due to drug use (and if so, what specific type of drug(s)) or whether the observed impairment is due to neurological conditions, illness, or disease. The DRE, or arresting officer in cases where no DRE is available, gathers a biological sample (blood or urine) to be analyzed by a toxicology lab to confirm the suspect had used a drug or drugs. Currently all fifty States and the District of Columbia participate in the DEC program with over 8,000 certified DREs.

Drug Testing Process

Generally, prosecution on a drug-impaired driving offense will include evidence that the driver had used a specific potentially impairing drug, and that an observed impairment likely resulted from that drug use. It is difficult, though not impossible, to obtain a conviction for drug-impaired driving without evidence of drug use by the suspect. For example, a suspect may refuse to provide a specimen for testing and/or the officer may be unable to obtain a search warrant in a timely fashion.

Evidence of drug use is typically obtained by the investigating law enforcement officer (physical evidence, odor of marijuana use, etc.), but most often comes from forensic testing conducted in a laboratory of a biological specimen taken from the suspect. Laboratory testing of biological specimens can be time consuming and expensive.

Laboratory Testing

Because of the large number of potentially impairing drugs the standard process is to conduct a screening test that will give an indication which of a number of drug categories might be present in the specimen. Screening tests are easier to conduct, cheaper, and can test for a number of drug categories simultaneously. For marijuana, it is common to use an immunoassay test designed to detect cannabinoids. However, a positive screening test cannot be taken as evidence that the drug is present in the specimen, as these tests lack high specificity, are subject to cross-reactivity, and may on occasion produce a false positive result. Many of the THC immunoassay screening tests can give a positive response to the presence of THC metabolites, even though THC is not present in the sample.

Following a positive screening test indicating that a type of drug appears to be present in the specimen, a more accurate, sensitive and specific test will be conducted for the drugs in the category indicated by the screening test. These tests are more complicated to conduct, require expensive equipment, and are time consuming. Many laboratories have backlogs of samples waiting for testing that are many months or longer.

The testing methods used will often depend on the suspect drug class. Most common are techniques combining a gas chromatograph (GC) with mass spectrometry (MS), often referred to as gas chromatography-mass spectrometry (GC/MS). Liquid chromatography is also used in combination with mass spectrometry, often referred to as liquid chromatography-mass spectrometry (LC-MS). Often, this process involves further ionization with a second pass through the mass spectrometer or LC/MS/MS. Not only are these methods highly specific in detecting a specific molecule (based on atomic weight and molecular structure) they allow the quantification of the amount of the drug present.

Specimen Collection

Evidence that a suspected impaired driver has actually used a drug can be provided by a test that definitively shows that it is present in a biological specimen. Typically urine or blood specimens are taken for this purpose and then sent to a laboratory for analysis. There may be a delay of days, weeks, or months before the results are known. Thus, an officer will not know the test result prior to the time

the suspect is charged. Different biological specimens have advantages and disadvantages, depending on the purpose of the testing. Biological specimens for drug testing include the following:

- **Blood Testing** — Blood testing is considered the “gold standard” for testing for the presence of drugs in impaired driving cases. However, as described in the background section to this report, currently there is limited ability to relate the amount of a drug or metabolite in blood to the presence and amount of impairment. Collecting a blood sample is an invasive procedure typically requiring a search warrant and a nurse or licensed phlebotomist.
- **Oral Fluid Testing** — The collection of oral fluid is minimally invasive and effective in detecting many types of drugs, though it may require a search warrant under the same conditions that pertain to blood sample collection. Devices that collect oral fluid for laboratory testing appear to be a reliable means of testing for recent drug use. The technology to rapidly, accurately and reliably collect oral fluid at the point of arrest is quickly evolving. Some companies market self-contained test kits that can be used by law enforcement; however, these point-of-arrest screening devices have not been shown to be completely accurate and reliable. Marijuana (THC) is readily detected in oral fluid, however, there are issues associated with distinguishing use versus environmental exposure, that have not been fully addressed.
- **Sweat Testing** — The collection of sweat over time can produce a cumulative record of prior drug use. However, a positive sweat test result cannot be regarded as evidence of impairment at the time of an arrest or crash. Sweat testing has no advantages over oral fluid testing, and is susceptible to contamination.
- **Hair Testing** — Although it is possible to test samples of hair for drug usage, the results are of limited utility for drug-impaired driving cases. Positive hair test results cannot be used to demonstrate drug use at the time of driving. In addition, variations in hair growth and the addition of substances to the hair, such as coloring products, make it difficult to extrapolate when drug usage occurred and may also affect the results. While THC can be detected in hair it can result from environmental exposure (e.g., from marijuana smoke) that can produce a positive hair test result.
- **Urine Testing** — The drug testing methodology for urinalysis is well established. Drugs and drug metabolites are detectable in urine for several days after the drug has been used (and sometimes for weeks). Urine test results cannot be used to prove that a driver was under the influence of the drug at the time of arrest or testing. Detection of THC or other cannabinoids in urine does not necessarily reflect recent use.

Measuring Driver Impairment Due to Marijuana Use

Review of Research on the Effects of Marijuana use on Driving

Smoking marijuana has been shown to affect a number of driving-related skills. Laboratory, simulator and instrumented vehicle studies have shown that marijuana can impair critical abilities necessary for safe driving, such as:

- slow reaction time, for example, responding to unexpected events - emergency braking (Casswell, 1977; Smiley et. al., 1981; Lenné, M.G., et al., 2010);
- cause problems with road tracking - lane position variability (Smiley, et. al., 1981; Robbe and O'Hanlon, 1993; Ramackers, 2004);

- decrease divided attention - target recognition (Smiley, 1999; Menetrey, et. al., 2005), impair cognitive performance - attention maintenance (Ramaekers, et. al., 2004); and impair executive functions - route planning, decision making, and risk taking (Dott, 1972, Ellingstad et al, 1973; Menetrey, et. al., 2005).

It should be noted that this type of research typically does not involve measurement of blood THC levels; rather, subjects' performance between non-dosed trials (placebo condition) and dosed trials (when administered marijuana) are compared. As a result of differences in how subjects conduct the smoking regime (inhalation rate, depth of inhalation, and time between inhalation and exhalation), fairly wide differences in blood THC levels are likely between subjects.

An example of this type of research on the effects of marijuana on driving related skills is a recent study conducted by the National Institute on Drug Abuse, the National Highway Traffic Safety Administration and the Office of National Drug Control Policy using the National Advanced Driving Simulator at the University of Iowa. Volunteer subjects were dosed on marijuana, alcohol or both marijuana and alcohol. They then drove a full motion driving simulator over a predetermined route. One of the effects of marijuana use was to cause an increase in the variability of their vehicle's lane position (the ability to maintain their vehicle in the center of the lane). Both alcohol and marijuana alone increased lane position variability and when combined the effects were additive. However, only alcohol increased lane departures (Hartman, et al 2015).

The same study looked at the speed at which the driver drove relative to the speed limit as a result of marijuana and alcohol use by the drivers. Subjects dosed on marijuana showed reduced mean speeds, increased time driving below the speed limit and increased following distance during a car following task. Alcohol, in contrast was associated with higher mean speeds (over the speed limit), greater variability in speed, and spent a greater percent of time driving above the speed limit. Marijuana had no effect on variability of speed. In the combined alcohol and marijuana condition it appeared that marijuana mitigated some of the effects found with alcohol by reducing the time spent above the speed limit. (Hartman, et al 2016).

It should also be noted that many studies have not shown impairment on these psychomotor tasks, cognitive and executive functions as have shown statistically significant impairments. It is not clear why this is the case. It may stem from different THC doses, different time lags between doses and testing or driving, differences in the tasks used to assess the effects, tolerance developed through frequent use, and the different dependent measurement employed and their relative sensitivity to small effects (Smiley, et. al., 1986; Lenné, et al., 2010).

Despite the variability in results, this research has demonstrated the potential of marijuana to impair driving related skills. It does not show a relationship between THC levels and impairment. These studies are conducted under carefully controlled conditions with precise measurements. Under these conditions even slight changes in performance are often statistically significant. Whether these often small changes in performance are practically significant (i.e., increase the risk of crash involvement) cannot be determined within this research framework.

An interesting finding from this research is that after smoking marijuana, subjects in most of the simulator and instrumented vehicle studies on marijuana and driving typically drive slower, follow other cars at greater distances, and take fewer risks than when sober (Stein, et. al., 1983; Smiley, et. al., 1981; Smiley, et. al., 1986; Casswell, 1977; Robbe and O'Hanlon, 1993). These effects appear to suggest that

the drivers are attempting to compensate for the subjective effects of using marijuana. In contrast, subjects dosed with alcohol typically drive faster, follow at closer distances, and take greater risks.

Given the large variety of driving related skills that are affected by THC, especially cognitive performance and judgment, the attempt by drivers who have ingested marijuana to compensate for the effects of marijuana is not likely to mitigate the detrimental effects on driving related skills.

Congress requested an assessment of methodologies and technologies for measuring driver impairment resulting from the use of marijuana, including the use of marijuana in combination with alcohol. The measurement of driver impairment is challenging since driver performance is a product of manual, cognitive, and perceptual skills, and the range of performance reflected in the normal driver population is large. Deficits in performance can arise from a variety of causes that include alcohol, marijuana and other drug use, distraction, drowsiness, emotional states (fear, excitement, anger), and other factors.

The DEC program includes a set of signs and symptoms (physiological, effects of the eyes, and behavior) that are indicative of marijuana use. They are used to determine if observed impairment is likely to be caused by marijuana. Almost all of these signs and symptoms are not based on driving impairment.

Current knowledge about the effects of marijuana on driving is insufficient to allow specification of a simple measure of driving impairment outside of controlled conditions. Other research methods can contribute to our understanding of the risk of driving after marijuana use and will be addressed later in this report.

The question of the combined use of alcohol and marijuana is definitely relevant to the issue of impaired driving. It is not uncommon to find people that have used both drugs. In a study of drug use by fatally injured drivers conducted in 1991, some 51.5 percent of the fatally injured drivers were found to be alcohol positive, while 6.7 percent were THC positive (Terhune, et. al. 1992). Of those who were THC positive over half were also positive for alcohol (the majority of which had high BAC levels).

In the 2013-2014 National Roadside Survey of Drug and Alcohol Use by Drivers, some 9.3 percent of all (daytime and nighttime) drug positive drivers also had a positive BrAC, while only 6.0 percent of drug negative drivers were positive for alcohol. Among daytime drivers, 2.5 percent of drug positive drivers were alcohol positive whereas 0.3 percent of drug negative drivers were alcohol positive.

Some studies have reported increased impairment on driving related skills when subjects are dosed on both alcohol and marijuana (Robbe and O'Hanlon, 1993; Smiley, et. al., 1986). In other cases, no increased impairment is found. The relative amount of both drugs ingested may help explain this confusing result. In some cases, the effects of alcohol may be so dominant that the additions of low doses of marijuana are not detectable. Further research may help clarify the effects of combined alcohol and marijuana use.

Thus, there are currently no evidence-based methods to detect marijuana-impaired driving. Marijuana has some regularly reported effects on driving related skills that might lend themselves to the development of marijuana-impaired driving detection techniques, similar to those that have been developed for alcohol-impaired driving (Harris, 1980 and Stuster, 1997). However, many of these effects can also be caused by alcohol, other drugs and driver conditions and activities like distraction, drowsiness, and illness. It is not possible to predict whether there might be a unique combination of cues that could be used by law enforcement to detect marijuana-impaired driving with a high degree of

accuracy. Such a method would need to have an extremely low false positive rate (incorrectly identifying a driver as marijuana-impaired when they are not) to be useable by law enforcement.

Feasibility of Developing an Impairment Standard for Drivers under the Influence of Marijuana

Currently, there is no impairment standard for drivers under the influence of marijuana. Many of the reasons for this are discussed elsewhere in this report. They include the fact that there is no chemical test for marijuana impairment, like a BAC or BrAC test for alcohol that quantifies the amount of alcohol in their body, indicates the degree of impairment, and the risk of crash involvement that results from the use of alcohol. The psychoactive ingredient in marijuana, delta-9-tetrahydrocannabinol (THC), does not correlate well with impairment. While very high levels of THC do indicate recent consumption (by smoking marijuana) it is very unlikely a police officer would encounter a suspect and obtain a sample of blood or oral fluid within a short enough time for high THC levels to be detected. As was mentioned earlier, impairment is observed for two to three hours after smoking; whereas by an hour after smoking peak THC levels have declined 80% - 90%.

Without a chemical test, the alternative is to develop a psychomotor, behavioral or cognitive test that would indicate the degree of driving impairment and elevated risk of crash involvement due to marijuana use. As was described earlier in this report, marijuana has been shown to impair critical driving related skills including psychomotor abilities like reaction time, tracking ability, and target detection, cognitive skills like judgment, anticipation, and divided attention, and executive functions like route planning and risk taking. However, available research does not support the development of such a psychomotor, behavioral or cognitive test that would be practical and feasible for law enforcement use at this time. It is certainly possible that when more research has been conducted on the impairing effects of marijuana use on driving, that can be shown to increase the risk of crash involvement, that it may be possible to develop such a test in the future.

NHTSA, and others, are currently conducting research toward that goal. We are funding a controlled dosing study of different ways to measure marijuana impairment in driving related skills in the hope that some of these measures will be amenable to use by law enforcement. The first step is to show that everyone dosed on marijuana shows an observable amount of impairment in a controlled laboratory setting. The next step would be to develop simplified versions of these measures that do not require sophisticated and expensive equipment that are suitable for field use by law enforcement. The last step would be to establish the relationship between the observed impairment on these tests and elevated risk of crash involvement. Success in the near term is not guaranteed, but possible.

Devices Capable of Measuring Marijuana Levels in Drivers

Conviction on a Driving Under the Influence Of Drugs (DUID) charge, or evidence that marijuana played a role in a crash, typically requires evidence that the driver was impaired by marijuana at the time of arrest or the crash. While alcohol concentration (BAC or BrAC) is an accurate measurement of alcohol impairment of driving, the presence of THC in the driver's body has not been shown to be a reliable measure of marijuana impairment of driving.

Traditionally, measurement of marijuana use by drivers has involved testing biological specimens for the presence of THC (typically blood samples, though urine and other substance have been used). As was stated previously, this testing can take days, weeks, or months before the results are available to law enforcement. The tests take a few hours or less to conduct, but large backlogs in many State laboratories conducting the testing can result in long delays before results are available. Such tests not only indicate whether THC was present in the sample tested, they also quantify the concentration or amount of THC

detected. These toxicological tests confirm presence of THC but they do not indicate driver impairment or necessarily indicate recent marijuana use (when the THC levels are low).

Recent developments in testing technology have resulted in some companies offering oral fluid drug screening devices that could be used by law enforcement to provide a preliminary indication whether a laboratory test (e.g. GC/MS/MS) is likely to yield a positive result for THC. Examples of these types of oral fluid devices include the Alere DDS2[®], which tests for five commonly abused drugs, and the Dräger DrugTest[®] 5000. See Table 1 for the drugs they are designed to detect and for the cutoff levels.

The use of onsite oral fluid screening devices might encourage law enforcement to pursue a drug-impaired driving charge when they otherwise might not. However, the accuracy and reliability of these devices has not yet been clearly established. While some studies of these devices have been conducted, many were funded by the manufacturers (Logan, Mohr, Talpins, 2014; Moore, Kelley-Baker, Lacey, 2013; Logan, Mohr, 2015). At this time, there is insufficient evidence on this subject to draw a firm conclusion. NHTSA is currently conducting research that is designed to provide some preliminary information on the accuracy, reliability, sensitivity and specificity of five of these devices.

While the presence of THC in a driver (blood, oral fluid, etc.) does not establish impairment, it also does not distinguish between active use of marijuana and environmental exposure or contamination. Some studies have shown that people exposed to second-hand marijuana smoke can test positive for THC (Cone, et. al, 2015; Moore, et.al, 2006).

Table 1
Oral Fluid Drug Screening Devices
Drug Categories and Analytic Cut-Off Levels

Device	Drug Category	Cut-Off Level (ng/ml)	Device	Drug Category	Cut-Off Level (ng/ml)
Alere DDS2			Dräger DrugTest[®] 5000		
	Cannabis (THC)	25		Cannabis (THC)	5
	Amphetamine	50		Amphetamine	50
	Methamphetamine	50		Methamphetamine	35
				(MDMA)	75
	Benzodiazepine	20		Benzodiazepine	15
	Opiates	40		Opiates	20
	Cocaine	30		Cocaine	20
	Methadone	15		Methadone	20

Downloaded from the Alere website (<http://www.alere.com/en/home/product-details/dds2-mobile-test-system.html>) and from the Dräger website (http://www.draeger.com/sites/enus_us/Pages/Alcohol-and-Drug-Detection/Law-Enforcement.aspx) on March 16, 2016

Methods to Differentiate the Cause of a Driving Impairment between Alcohol and Marijuana

There are no evidence-based methods to differentiate the cause of driving impairment between alcohol and marijuana. Given the increasing use of marijuana by drivers in the U.S., there are a number of efforts underway, including work by NHTSA, to develop ways of differentiating impairment by alcohol from marijuana. These efforts will take a number of years and a successful outcome cannot be guaranteed at this time.

Description and Assessment of Current State Laws Relating to Marijuana-Impaired Driving

All States have laws prohibiting driving while impaired (under the influence or intoxicated) by alcohol and other drugs (which includes marijuana). These laws have existed for many decades. Under such statutes a State must prove that the drug “caused” the impaired driving (i.e., a prosecutor must show a connection between drug ingestion and the incapacity or impairment of the driver).

In addition, some States have what is known as a *per se* law, that make it a criminal offense for a driver to have a drug or metabolite in his/her body while operating a motor vehicle. These “zero tolerance” laws specify that it is illegal to drive with any or more than a specific concentration of the drugs in blood or urine. They typically cover some or all Schedule I drugs as identified under the Controlled Substance Act of 1970¹. In some cases they cover only specific drugs listed in the statute. They also exclude categories of drugs, for example, drugs used by a doctor’s order (prescription). In some cases they explicitly exclude marijuana.

Fifteen States have drug *per se* (zero tolerance) statutes. In seven States (AZ, DE, GA, IN, MN, PA, and UT) it is illegal to have any amount of a drug or its metabolite in the body while operating a motor vehicle (note: the Minnesota law exempts marijuana). In five States (IL, IA, MI, RI, and WI) it is illegal to have any amount of a prohibited drug in the body while operating a motor vehicle. Three States (NV, OH, and VA) make it illegal to have specific amounts of specified prohibited substances in the body while operating a motor vehicle. Two States (NC and SD) make it illegal for a person under age 21 to drive with any amount of a prohibited drug or substance in their bodies. Five States (CA, CO, ID, KS, and WV) make it illegal for any drug addict or habitual user of drugs to drive a vehicle.

Only a few States (HI, NY, and CA) have DUID statutes separate from their alcohol driving under the influence (DUI) laws. In all other States, a driver violates a DUI statute if he/she drives under the influence of alcohol, drugs or a combination of alcohol and drugs. The violation is the same, as are the penalties. The one exception is the State of Washington in which there are different penalties for only drug use, as opposed to alcohol use or a combination of alcohol and drug use.

Twenty States (AL, AZ, AR, DE, GA, ID, IL, KS, KY, MT, NC, OK, PA, RI, SD, TN, TX, VT, WA, and WV) and Puerto Rico specifically disallow legal entitlement to use the drug as a defense to a DUID charge. Use of a drug pursuant to a valid prescription and/or according to directions is a defense to a DUID charge in several States.

¹ The Controlled Substances Act, Title II of the Comprehensive Drug Abuse Prevention and Control Act of 1970, is the federal U.S. drug policy under which the manufacture, importation, possession, use and distribution of certain narcotics, stimulants, depressants, hallucinogens, anabolic steroids and other chemicals is regulated.

All but five States (AL, AK, MA, NJ, and WV) extend their implied consent laws (i.e., to provide a specimen if requested by law enforcement) to DUID. However, both Alabama and Alaska make a provision for compulsory testing in cases involving serious injury or fatal crashes. Of the remaining 45 States (plus DC and PR) that extend their implied consent laws to drugged driving, nine (AR, IN, LA, MD, MN, NE, NM, OH, and RI) provide criminal penalties for a refusal to take a test under the implied consent law.

Twenty-eight States and the District of Columbia and Puerto Rico allow for a forced taking of a specimen over the objection of the driver, but this is generally in cases of a serious injury or fatal crash, and there is probable cause that the driver is under the influence of a drug. Based on the recent Supreme Court case in (*Missouri v. McNeely* is: 133 S.Ct. 1552 (2013)) it would appear that law enforcement is required to obtain a search warrant for blood tests except in special circumstances.

Under implied consent provisions, most State laws stipulate the type of specimen that police officers are authorized to collect. Thirty-four States permit blood and/or urine; eight States only allow for blood collection; six States permit saliva; and eight States (plus Puerto Rico) permit “other bodily substances.”

With respect to sanctions, some States have relatively light sentences for first offenders, while others are more severe in their handling of first offenders. Some States have made a second or third offense a felony, whereas in other States felony status is not reached until the fourth or subsequent offense. Penalties, including fines and incarceration, differ from State to State. Many States utilize community service, house arrest, electronic monitoring, work release, restitution and assessment of cost and fees to supplement the court’s ability to sanction offenders. Approximately 35 States provide for court-ordered substance abuse treatment and/or education for offenders. A growing number of States require participation in a program or treatment as a condition of probation or as a pre-requisite to reinstatement of driving privileges.

Clearly, there is great variability among the States in how they approach driving under the influence of drugs. The absence of a separate offense for driving under the influence of drugs makes it difficult to distinguish between DUID and DWI-alcohol arrest and disposition. A recent attempt to investigate the effectiveness of drug per se laws was unable to draw conclusions due to the paucity of objective data and the inability of State data systems to distinguish between DUID and DWI-alcohol arrests and convictions (Lacey, Brainard, and Snitow, 2010). In addition, in cases where a driver shows evidence of multiple impairments, the lack of difference in sanctions between drug- and alcohol-impaired driving provides little incentive for criminal justice officials to pursue a drugged-driving charge in addition to an alcohol offense.

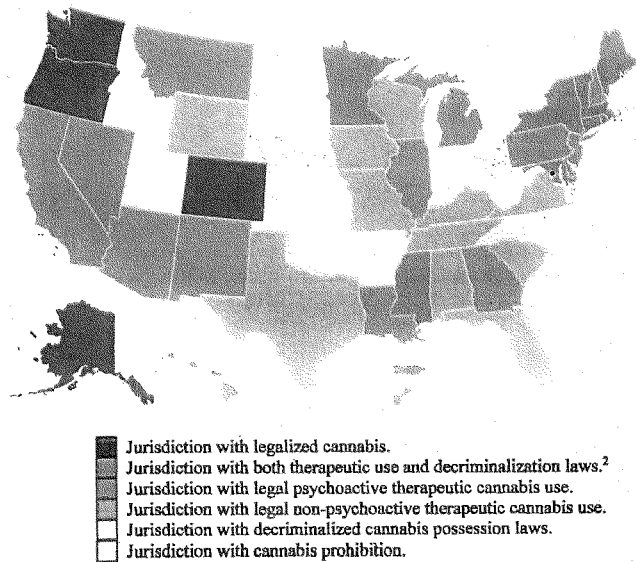
Other Relevant Marijuana Laws

Marijuana remains an illegal Schedule I drug from a federal perspective. However, due to the public’s changing views of marijuana a majority of States have passed laws providing for some type of limited use of marijuana. These laws include outright legalization of personal recreational use, decriminalization of personal use, State laws allowing therapeutic use (“medical marijuana”), and State laws allowing limited therapeutic marijuana use. The States that have passed these different laws are shown in Figure 5 below (note this information is accurate as of June 2016, many States have measures on their November ballots pertaining to marijuana use that will probably result in additional states legalizing recreational marijuana use and therapeutic use). Within these broad categories there are wide differences among individual statutes. Twenty-two States and two inhabited territories still conform to the federal position that marijuana possession and sales are illegal and prohibited entirely.

All of this State legislative activity may be sending a message to drivers that marijuana is not as dangerous as previously thought. However even if marijuana use is legal, that does not mean that driving impaired by marijuana is legal or safe. This is similar to the case for alcohol, which is a legal drug, but driving impaired by alcohol is illegal. This changing perception of the dangers of marijuana use is likely impacting personal choices regarding marijuana use. As more people choose to use marijuana it is likely more people will drive impaired by marijuana.

Currently 25 States have passed therapeutic marijuana use laws (along with Washington, DC, Guam, and Puerto Rico). These States are shown in Table 2 below along with the year their therapeutic marijuana use laws were originally enacted (some have modified their therapeutic marijuana use laws one or more times since enactment). Some of the most recently passed measures have not gone into effect yet.

Figure 5
Marijuana Laws in the United States¹



¹ Includes laws which have not yet gone into effect.

² Mississippi has only legal non-psychoactive therapeutic cannabis use.

An additional ten States have a form of limited therapeutic marijuana use (with low THC and high CBD allowed). CBD is a cannabinoid that does not appear to be psychoactive and lacks most adverse side-effects but is believed to have potential for medical purposes.

Twenty-one States and the District of Columbia have decriminalized small amounts of marijuana. This generally means certain small personal-consumption amounts are a civil or local infraction, not a State crime (or are a misdemeanor with no possibility of jail time).

Decriminalization States are Alaska (which has subsequently legalized personal consumption and possession of small quantities), California, Colorado (also now has allowed legalization of personal consumption), Connecticut, Delaware (enacted in 2015), Illinois (enacted in 2016), Maine, Maryland,

Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New York, North Carolina, Ohio, Oregon (also now with legalized personal consumption), Rhode Island, Vermont and Washington (now having legalized personal consumption), and the District of Columbia (also now with legal personal consumption). A number of cities and counties across the U.S. have also decriminalized personal use and possession of small quantities of marijuana.

Six of the States that have decriminalized possession or use of marijuana (Minnesota, Missouri, Nevada, North Carolina, Ohio and Oregon) have made it a low-level misdemeanor, with no possibility of jail for qualifying offenses. The other States that decriminalized marijuana use have specified small amounts of marijuana as a civil infraction. As noted above, four of the States that originally decriminalized personal use and possession of marijuana have subsequently legalized the personal recreational use of marijuana.

Some States have passed more than one of these measures. The laws of the remaining twenty-two States and two inhabited territories follow the federal laws and prohibit marijuana possession and sales are illegal and prohibited entirely.

Table 2
States with Therapeutic Marijuana Use Laws and Date of Enactment

State	Date of Enactment	State	Date of Enactment
1. California	1996	2. Alaska	1998
3. Oregon	1998	4. Washington	1998
5. Colorado	2000	6. Hawaii	2000
7. Nevada	2000	8. Vermont	2004
9. New Mexico	2008	10. Michigan	2008
11. Rhode Island	2009	12. New Jersey	2009
13. Arizona	2010	14. Maine	2010
15. Delaware	2011	16. Montana	2011
17. Connecticut	2012	18. Maryland	2013
19. Massachusetts	2013	20. New Hampshire	2013
21. Illinois	2014	22. Minnesota	2014
23. New York	2014	24. Ohio	2016
25. Pennsylvania	2016		

Table 3
States with Limited Therapeutic Marijuana Use Laws

State	Date Enacted	State	Date Enacted
Alabama	2014*	Iowa	2014
Kentucky	2014	Mississippi	2014
Missouri	2014	North Carolina	2014
South Carolina	2014	Tennessee	2014
Utah	2014	Wisconsin	2013

* Not yet effective

Table 4
States with Personalized Use Decriminalized

State	Date Enacted	State	Date Enacted
Alaska*	2014	California	1976
Colorado*	1975	Connecticut	2011
Delaware	2015	Illinois	2015
Maine	1976	Maryland	2014
Massachusetts	2008	Minnesota	1976
Mississippi	1977	Missouri	2014
Nebraska	1978	Nevada	2001
New York	1977	North Carolina	1977
South Carolina		Ohio	1975
Oregon*	1973	Rhode Island	2012
Vermont	2013	Washington*	2012
District of Columbia*	2014		

* Also has legalized personal possession and use of small amounts of marijuana

Table 5
States Legalizing Recreational Use¹

State	Date of Enactment	Amount Allowed
Alaska	2015	1 oz.
Colorado	2014	1 oz.
Oregon	2015	8 oz.
Washington	2014	1 oz.
District of Columbia	2014	2 oz.

¹ – For persons at least 21 years old

Description and Assessment of the Role of Marijuana as a Causal Factor in Traffic Crashes and the Extent of the Problem of Marijuana-Impaired Driving

The scope and magnitude of the marijuana-impaired driving problem in this country cannot be clearly specified at this time. However, there are a number of indicators that suggest that a problem exists. These include numerous cases of drivers involved in serious injury and fatal crashes who are held responsible, in part as a result of marijuana-impaired driving, along with a significant number of drivers arrested and convicted for marijuana-impaired driving. There is also clear evidence that an increasing number of people use marijuana, perhaps reflecting changing public attitudes toward marijuana use, possibly due, in part, to State medicinal marijuana laws, decriminalization of marijuana, and legalization of recreational use of marijuana (see the 2016 report from Monitoring the Future Annual Survey of Drug Use conducted by NIDA and the 2013-2014 National Roadside Survey). A series of nationally representative studies of driver use of alcohol and drugs conducted by the National Highway Traffic Safety Administration have found increased use of marijuana by drivers. These studies have provided the best empirical evidence regarding marijuana use by a wide swath of the American public (Lacey, et al, 2009; Berning, Compton and Wochinger, 2015). Previous estimates of marijuana use have relied on self-report data, which likely included some underreporting. The NHTSA studies collected blood and oral fluid samples from paid volunteer drivers on the road and analyzed these samples for the presence of THC.

Prevalence of Marijuana Use by Drivers

Over the last five decades, NHTSA and/or the Insurance Institute for Highway Safety (IIHS) conducted five national surveys to estimate the prevalence of drinking and driving in the United States (Wolfe, 1974; Lund and Wolfe, 1991; Voas et al, 1998; Compton and Berning, 2009; Lacey et al, 2009). The first National Roadside Survey (NRS) was conducted in 1973, followed by national surveys of drivers in 1986, 1996, 2007, and 2013–2014. These surveys used a stratified random sample of weekend nighttime drivers in the contiguous 48 States and collected data directly from drivers on the road.

The 2007 NRS added procedures to the NRS for the first time to estimate the use by drivers of other potentially impairing drugs. Prior roadside surveys had only collected breath samples to determine breath alcohol concentration (BrAC). Due to developments in analytical toxicology, NHTSA determined it would be feasible in the 2007 and 2013–2014 surveys to determine driver use of a variety of potentially impairing drugs including illegal drugs as well as legal medications.

The National Roadside Surveys have shown a remarkable decreasing trend in alcohol use from the first survey in 1973 to the most recent one in 2013–2014. Figure 6 shows the percentage of weekend nighttime drivers with BrACs across three categories: BrAC of .005 to .049 g/210L; BrACs of .050 to .079; and BrACs of .080 and higher. The surveys found a decline in each BrAC category. Further, there has been a large decrease in the percentage of drivers who were alcohol positive, from 35.9 percent in 1973 to 8.3 percent in 2013–2014. For BrACs of .08 and higher, there was a decrease from 7.5 percent in 1973 to 1.5 percent in 2013–2014, revealing an impressive 80 percent reduction in the percentage of alcohol-impaired drivers on the road on weekend nights (Berning, Compton, and Wochinger, 2015).

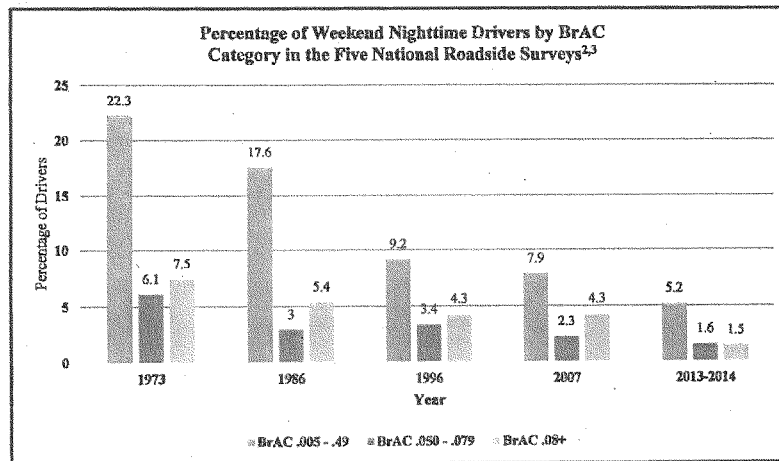
THC was by far the most prevalent drug detected in this representative sample of drivers. As shown in Table 6, 8.6 percent of the drivers tested positive for THC in 2007 and 12.6 percent tested positive for THC in 2013-2014. This represents a large 48 percent increase in the prevalence of drivers testing positive for THC in just seven years. On the other hand, the percentage of drivers testing positive for

alcohol declined from 12.4 percent in 2007 to 8.3 percent in 2013-2014, an approximately 33 percent decrease (Berning, Compton, and Wochinger, 2015).

This is the only reliable source of data on actual THC use by drivers (see Appendix 1 for a brief description of how this survey is conducted). NHTSA is not currently planning to update this information, as Congress has prohibited NHTSA from expending funds on this type of research (see the prohibition on using FY 2016 funds for this purpose per PL 114-113, Division L, Title 1, Section 142, dated 12-18-2015). Therefore, NHTSA, States, and law enforcement agencies will have to rely on increasingly outdated data to develop and evaluate measures to reduce drug-impaired driving. It is unlikely any other entity will have the capability and funding to undertake something of this complexity and magnitude.

In addition to these national roadside surveys, there have been two Statewide representative surveys of alcohol and drug use by drivers; one conducted in California in 2012 and the other designed to examine the effects of the legalization of recreational use of marijuana, specifically retail sales, in Washington in 2014 and 2015.

Figure 6



² .08 g/210 L = grams per 210 liters of breath. The illegal limit in all States is .08.

³ From 1973 to 2004, the States had BrAC limits that ranged from .08 to .15.

After 2004, all States had BrAC limits of .08.

Table 6
Weekend Nighttime Prevalence of Alcohol and THC
in 2007 Compared to 2013-2014

Substance	2007	2013 - 2014
Alcohol	12.4%	8.3%
THC	8.6%	12.6%

The California Statewide Roadside Survey was the first such survey conducted in one State. It examined the prevalence of alcohol, marijuana and other drug use by drivers (Lacey J, et al, 2012). The survey was modeled on data collection procedures used in the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers, sponsored by NHTSA. The results showed that marijuana (THC) was the most frequently encountered drug with a prevalence rate of 7.4 percent of weekend nighttime drivers in California.

The study in Washington State was conducted jointly by the Washington Traffic Safety Commission and NHTSA. It followed the passage in 2012 of a citizen initiative to legalize personal recreational use of marijuana and was designed to assess whether the percentage of drivers who tested positive for THC increased after retail sales of marijuana became legal in July 2014.

Data was collected in three stages: 1) immediately before implementation of legal sales, 2) six months after implementation, and 3) one year after implementation. The results of the study showed an increase in THC positive drivers across the three waves: 14.6 percent, 19.4 percent, and 21.4 percent. These increases were not statistically significant. There was a statistically significant increase in daytime prevalence of THC-positive drivers between Wave 1 (7.8%) and Wave 3 (18.9%). While there was also an increase in drivers positive for THC at night across each successive wave (17.5%, 19.8%, and 22.2%), these were not statistically significant.

Estimating Crash Risk of Marijuana-Impaired Drivers

While the extent of use of alcohol by drivers and the risks posed by alcohol use have been well known for many decades, relatively little has been known about the use of other drugs by drivers and the associated risks. It is known that marijuana is the most frequently detected drug (other than alcohol) in crash-involved drivers as well as the general driving population (Terhune, 1982; Terhune et al., 1992; Lacey et al., 2009; Walsh et al., 2005; Berning, Compton and Wochinger, 2015), and drug-impaired driving is an issue of increasing public and governmental concern in the United States and in many other countries (Compton et al., 2009; Asbridge et al., 2012; ICADTS, 2007). While it is readily apparent that driving-related skills can be impaired by a wide variety of illegal substances and medications, the nature and scope of the drug-impaired driving problem has been difficult to define (Jones et al., 2003; DuPont et al., 2012; Houwing, 2013).

As previously discussed there is evidence that marijuana use impairs psychomotor skills, divided attention, lane tracking, and cognitive functions (Ramaekers, 2000; Robbe and O'Hanlon, 1993; Moskowitz, 1995; Hartman and Huestis, 2013). However, its role in contributing to the occurrence of crashes remains less clear. Many studies, using a variety of methods, have attempted to estimate the risk

of driving after use of marijuana (Li et al., 2012; Asbridge et al., 2012). The methods have included experimental studies, observational studies, and epidemiological studies. While useful in identifying how marijuana affects the performance of driving tasks, experimental and observational studies do not lend themselves to predicting real world crash risk.

Epidemiological Studies

Epidemiological studies differ in how they estimate risk. Culpability studies compare the rate at which crash involved, drug-positive drivers and drug-negative drivers are deemed to be at fault for their crashes. Case-control studies compare drug use by crash-involved drivers to drug use by non-crash involved drivers. In general, the case-control method is preferable since it can eliminate more sources of potential bias in estimating crash risk resulting from drug use (e.g., alcohol use is much higher at night and on weekends than during the day or on weekdays). The existing epidemiological research (both culpability and case-control studies) have produced contradictory estimates of risk for marijuana use. Some of these studies have suggested that marijuana use has minimal or no effect on the likelihood of crash involvement, while others have estimated a small increase in the risk of crash involvement.

Two recent population-based case control studies have estimated the crash risk of drug use by drivers by using NHTSA's Fatality Analysis Reporting System (FARS) 2007 data for the crash-involved driver population and the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers for the control drivers (Li, Brady, & Chen, 2013; Romano, Torres-Saavedra, Voas, & Lacey, 2014). The Li study estimated the increased risk of crash involvement for drivers using marijuana at 1.83 times that of drug-free drivers, while the Romano study found no increased risk of crash involvement for those drivers testing positive for THC. However, current limitations in the FARS dataset do not allow calculation of unbiased, reliable and valid estimates of the risk of crash involvement that results from drug use (Berning & Smither, 2014).

Challenges in Estimating Crash Risk from Drug Use

Conducting case-control studies to estimate the risk of crash involvement from drug use presents many difficulties. The first challenge is obtaining reliable and accurate estimates of drug use. Many studies rely on self-reporting (which have obvious inherent problems) rather than actual measurement of THC in blood or oral fluid. Also, the extent of care regarding the matching of crash-involved and control drivers varies to a large extent among studies. The more carefully controlled studies, that actually measured marijuana (THC) use by drivers rather than relying on self-reporting, and that had a high degree of control of covariates that could bias the results, generally show low risk estimates or in a few cases no risk associated with marijuana use (Elvik, 2013).

Recent Meta-Analyses

A recent meta-analysis by Li (2012) used nine studies, five of which were based on self-report; of the remaining four studies, marijuana use was inferred from a urine test in three of the studies (which indicates the drivers were marijuana users but not necessarily had used marijuana prior to driving). The studies that used self-reporting produced increased crash risk estimates that ranged from 1.7 to 7.16 times as a result of marijuana use by drivers. The two studies that used urine to determine marijuana use resulted in risk estimates of 0.85 to 3.43 times, while the two studies using blood analysis had risk estimates of 2.10 and 2.11 times. The overall pooled risk estimate was 2.66 times.

Similarly, a meta-analysis by Asbridge (2012) also used nine studies, but six were culpability studies with only three using a case-control approach. One of the culpability studies used only FARS data (with associated limitations). Of the three using case-control methods, two used self-report by the control drivers and one used non-drug positive crash-involved drivers (meaning the controls were drug-free, crash-involved drivers). The risk estimates resulting from marijuana use ranged from 0.82 to 7.16 (two studies showing marijuana use reduced the risk of crash involvement while seven studies showed an increased risk). The pooled odds ratio for all nine studies was 1.92.

Recently, a large-scale population-based case control study (in which an attempt was made to have the crash and non-crash control drivers represent all crash-involved drivers and all non-crash involved drivers in the same jurisdiction) was conducted by the European Union to estimate the crash risk of drug use by drivers. A population-based study can benefit from a large sample of drivers covering a wide geographic area, which may improve the generalizability of findings. However, the scale of such studies typically limits the control of subject selection. In a population-based case control study, the case and control drivers are selected from different sources. For example, the crash-involved drivers might be injured drivers taken to a hospital after a crash, while the control drivers might be selected from general traffic. This method lacks the careful matching (day of week, time of day, location, direction of travel, etc.) used in smaller-scale studies, so it involves some compromise of control for the benefit of a much larger sample size.

DRUID Study

The recent population-based study known as Driving Under the Influence of Drugs, Alcohol and Medicines (DRUID), is the largest study of this type (Hels et al., 2010). This study, conducted in nine European Union (EU) countries: Belgium, Denmark, Finland, Italy, Lithuania, and the Netherlands used seriously injured crash-involved drivers while Norway, Portugal, and Sweden used fatally injured drivers. The crash-involved fatally injured driver sample came from a group of drivers for whom a drug test had been conducted, over a period of two to three years. Seriously injured drivers came from a sample of drivers taken to a hospital. Controls came from a roadside survey conducted in each of the respective countries, around the same general time period (e.g., over a year) in each country and represented a sample of drivers, in some cases, from the same general area from which the fatally and seriously injured drivers' crashes occurred. However, in only two of the countries did the controls come from the exact same area of the country as the crash-involved drivers. The specific locations of the crashes were not matched to the sites used to obtain the non-crash involved control drivers. Also, drug presence was determined from blood samples for all the crash-involved drivers, but eight of the countries used oral fluid to determine drug presence in the non-crash involved drivers (four countries also used blood for some control drivers).

Odds ratios were used to estimate the risk of crash involvement after marijuana use in the fatally and seriously injured drivers. The results for the seriously injured drivers showed considerable national variability, ranging from 0.29 times (reduced crash involvement) to 25.38 times (increased crash involvement). The combined risk was 1.39 times that of drug-free drivers, but this was not statistically significant. For fatally injured drivers the estimated risk ranged from 3.91 to 28.88, while the combined risk was 1.33 times (also not statistically significant).

In a pooled analysis of the DRUID data, the highest risk of crash involvement was for drivers with high alcohol concentrations (above .12 BAC)—they had a crash risk 20–200 times that of sober drivers. Drivers with BACs between .08 and .12 were estimated to be 5–30 times more likely to crash than sober drivers. Drivers positive for THC were estimated to be at elevated risk (1–3 times that of drivers not

positive for THC), similar to drivers with BAC levels between .01 to < 0.05. The DRUID report noted that some of the risk estimates were based on few positive cases and/or controls which resulted in wide confidence intervals.

In order to further understand the risk of drug use by drivers, NHTSA, with funding support from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), contracted with the Pacific Institute for Research and Evaluation (PIRE) to conduct the largest and most comprehensive study to address alcohol and drug crash risk in the United States through a case-control study, that employed a rigorous design involving a precise matching of cases and controls.

This case control study collected information from crash-involved and non-crash involved drivers for 20 months (2010 – 2012) in Virginia Beach, Virginia.

NHTSA's "Crash Risk" Study

This case control crash risk study is the first large-scale study in the United States to include drugs other than alcohol. It was designed to estimate the risk associated with alcohol- and drug-positive driving. Virginia Beach, Virginia, was selected for this study because of the outstanding cooperation of the Virginia Beach Police Department and other local agencies with our stringent research protocol. Another reason for selection was that Virginia Beach is large enough to provide a sufficient number of crashes for meaningful analysis. Data was collected from more than 3,000 crash-involved drivers and 6,000 control drivers (not involved in crashes). Breath alcohol measurements were obtained from a total of 10,221 drivers, oral fluid samples from 9,285 drivers, and blood samples from 1,764 drivers.

Research teams responded to crashes 24 hours a day, 7 days a week over a 20-month period. In order to maximize comparability, efforts were made to match control drivers to each crash-involved driver. One week after a driver involved in a crash provided data for the study, control drivers were selected at the same location, day of week, time of day, and direction of travel as the original crash. This allowed a comparison to be made between use of alcohol and other drugs by drivers involved in a crash with drivers not in a crash, resulting in an estimation of the relative risk of crash involvement associated with alcohol or drug use. In this study, the term marijuana is used to refer to drivers who tested positive for delta-9-tetrahydrocannabinol (THC). Drivers who tested positive for inactive cannabinoids were not considered positive for marijuana.

The drug most frequently detected in the oral fluid and blood of drivers was THC, detected in 7.6 percent (n = 234) of the crash-involved drivers and 6.1 percent (n = 379) of the control drivers. To estimate the risk of crashing associated with drug use, logistic regression was used to obtain odds ratios (that are close to relative risk estimates). Odds ratios estimate the probability of an event (i.e., crash) over the probability that such an event does not occur. If a variable (i.e., drug use) is not associated with a crash, the odds ratio of crash involvement associated with that variable will be 1.00. Odds ratios above 1.00 indicate a positive relationship, with stronger relationships reflected by higher odds ratios.

The unadjusted odds ratio for THC was 1.25, representing a significantly elevated risk of crashing by about 1.25 times or 25 percent. These unadjusted odds ratios must be interpreted with caution as they do not account for other factors that may contribute to increased crash risk. Other factors, such as demographic variables, have been shown to have a significant effect on crash risk. For example, male drivers have a higher crash rate than female drivers. Likewise, young drivers have a higher crash rate

than older drivers. To the extent that these demographic variables are correlated with specific types of drug use, they may account for some of the increased crash risk associated with drug use.

When the odds ratios were adjusted for demographic variable of age, gender, and race/ethnicity the significant increased risk of crash involvement associated with THC disappeared. The adjusted odds ratio for THC positive drivers was 1.05 (95% Confidence Limit of 0.86 – 1.27). This adjusted odds ratio was not statistically significant.

A final adjustment was made for the presence of alcohol. When both demographic variables and the presence of alcohol were taken into account, the odds ratio for THC declined further to 1.00 (95% Confidence Limit of 0.83 – 1.22). This means there was no increased risk of crash involvement found over alcohol or drug free drivers.

As was described above, there was no difference in crash risk for marijuana-positive drivers who were also positive for alcohol than for marijuana-positive drivers with no alcohol, beyond the risk attributable to alcohol. Further analyses examined the potential interaction between drug use and breath alcohol concentration. No statistically significant interaction effect on crash risk was found between for THC positive drivers and BrAC level.

More information on the methodology of this study is available in a Research Note (Compton and Berning, 2015 which can be downloaded at: http://www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug_and_Alcohol_Crash_Risk.pdf

Recommendations

Increase the Use of Effective and Efficient Methods for Training Law Enforcement Personnel, Including Drug Recognition Experts, to Detect or Measure the Level of Impairment of a Motor Vehicle Operator who is Under the Influence of Marijuana by the Use of Technology or Otherwise.

Currently, training for law enforcement officers to detect and recognize marijuana impairment in drivers is available in three increasingly detailed levels. Officers at the highest level of training are capable of making determinations about which drug category (or categories) may be contributing to a driver's inability to operate a vehicle. Depending on the individual State and local requirements, not all officers may receive training in DUID prior to completing their basic training requirements or afterwards.

To improve consistency in training, NHTSA developed an 8-hour course, Drugs That Impair Driving, which can be used in conjunction with the Standardized Field Sobriety Test (SFST) training. NHTSA considers SFST training the foundation for all impaired driving detection training. The Drugs That Impair Driving course was developed to provide a general description of drugs, signs that may indicate drug use and medicinal conditions that show signs similar to drug use. The course was also developed to acquaint officers with the most common types of drugs that impair driving.

A second level course, the 16-hour Advanced Roadside Impaired Driving Enforcement Program (ARIDE), is designed to give officers the ability to apply information they have learned about DUID to make effective arrests based on probable cause that provides the necessary evidence for prosecution. In order to accomplish this goal, the program seeks to increase the officer's overall knowledge of the general manifestations of alcohol and drug impairment and to increase their ability to recognize these

indicators in the drivers they encounter during their enforcement duties. If these drivers are suspected to be impaired, then officers will be better informed in the arrest decision.

In order to expand the number of law enforcement officers who might take this training, NHTSA, along with the IACP, offers an online version of this training program that is available to law enforcement agencies.

The highest level of training comes in the form of the Drug Evaluation and Classification (DEC) program (NHTSA, 2007). In the early 1980s NHTSA started to take the DEC program, based on the Los Angeles Police Department's Drug Recognition Expert (DRE) program, nationwide. The DEC program trains officers to identify the signs and symptoms of drug use that could be used to determine whether a suspected impaired driver was impaired by drugs and to rule out other possible causes such as neurological deficits, diseases, and illness. The procedure was designed to aid the officer in determining what specific type of drug was the likely cause of the observed impairment. The program was intended to help develop evidence of impairment and guide the analyses of biological specimens when looking for the presence of drugs other than alcohol in impaired drivers. The DEC training requires 9 days in the classroom and additional days of field certification testing. The program is designed to provide a limited number of DREs in a jurisdiction. It is not designed for the routine patrol officer.

As was mentioned previously, the DEC program has expanded to all fifty States and the District of Columbia. There are currently over 8,000 certified DREs in the program. The ARIDE training is not designed to provide the same level of expertise as that demonstrated by DREs. An ARIDE trained officer who encounters a suspected marijuana-impaired driver, would likely summon a DRE to conduct the DEC program evaluation, if one is available.

In summary, training is currently available to law enforcement personnel in a tiered approach, ranging from basic information about the different types of drugs that can impair driving, signs and symptoms that may indicate drug use (including impaired driving cues), to a more detailed training program that equips officers to better recognize when a driver is likely to be impaired by alcohol, marijuana and other drugs and collect the necessary information to support an arrest and prosecution. Finally, there is the DEC program that provides officers with much more detailed information about different classes of drugs that can impair driving, trains them to use standardized examination and test procedures to build a convincing case of drug-impaired driving.

Impaired driving training is resource-intensive in terms of cost and time away from normal duties. Law enforcement agencies typically operate with limited funding and staff and face competing demands. Most patrol officers will not often encounter a marijuana-impaired driver, so the current tiered approach is a reasonable way of efficiently dealing with drug-impaired driving.

Continue Research to Enable Development of an Impairment Standard for Driving Under the Influence of Marijuana, and in the Meantime, Maintain Training and Other Support to Enable Law Enforcement Officers and Prosecutors to Pursue Cases Using Available Evidence.

As the previous sections of this report have indicated, the poor correlation of THC level in the blood or oral fluid with impairment precludes using THC blood or oral fluid levels as an indicator of driver impairment. The use of BAC or BrAC as an indicator of driving impairment has assisted law enforcement and prosecutors in being able to show that an alcohol-impaired driver has a BAC that has been demonstrated to increase crash risk. The use of THC level cannot serve this same role for marijuana-impaired driving (Dupont, Voas, Walsh, Shea, Talpins, and Neil, 2012).

Toxicologists are not able to provide expert testimony that a specific amount of THC present in a suspect's blood (or other specimen) is definitively associated with being impaired by marijuana and render the driver unable to drive safely.

It should be noted that the DEA has recently provided revised guidance in August of 2016, to researchers, that should make it easier to obtain and conduct studies using marijuana (21 CFR Part 1301 Docket Number DEA 447 Dated July 15, 2016). This should spur more research that may help to address some of the issues that are currently unresolved about marijuana and driving.

Expert witness testimony by toxicologists that a BAC or BrAC level found in a suspect's blood or breath that was over the legal limit, indicates the suspect was too impaired to drive safely is fairly routine testimony in alcohol-impaired driving trials. However, the absence of BAC or BrAC evidence in an alcohol-impaired driving case is not a bar to successful prosecution. Drivers frequently refuse to take a BAC or BrAC test.

A 2012 NHTSA study of BAC test refusals estimated that approximately 21 percent of all suspected alcohol-impaired drivers requested to take a BAC or BrAC test refuse. That study did not find a consistent difference in conviction rates between drivers who took a BAC test and drivers who refused the test. Interestingly, those drivers who refused to take the requested BAC test received substantially higher penalties upon conviction (Jones and Nichols, 2012).

A properly trained officer who follows good investigatory techniques and carefully documents their observations can make a convincing case that a driver was too impaired by alcohol to drive safely. The same is true for suspected marijuana-impaired drivers. The lack of an "impairment standard" equivalent to BAC level does not prevent the successful prosecution of a marijuana-impaired driver. The lack of toxicological evidence simply means that the officer has to offer other evidence that the driver was under the influence of marijuana and too impaired to drive safely.

Whether there is some other more formal and standardized way to determine that a marijuana-impaired driver is too impaired to drive safely (a test that correlates with increased crash risk) remains to be determined. NHTSA has research underway that attempts to develop a relatively simple field test for law enforcement use that would indicate that a suspect is impaired by marijuana. This type of test would not indicate driving impairment (law enforcement observations would be required for that evidence), but would be a useful tool for law enforcement, nonetheless.

A number of States have set a THC limit in their laws indicating that if a suspect's THC concentration is above that level (typically 5 ng/ml of blood), then the suspect is to be considered impaired. This per se limit appears to have been based on something other than scientific evidence. Some recent studies demonstrate that such per se limits are not evidence-based.

A recent study looked at the THC levels in DUID cases in Washington State between August 2009 and June 2013 where blood samples were sent to the State toxicology laboratory for testing. All of these cases involved suspects believed to be impaired by marijuana by the arresting officer or DRE. All of the samples were screened positive by a cannabinoid ELISA immunoassay test. The blood was then analyzed for THC (cut off 1 ng/ml) using three dimensional gas chromatography mass spectrometry. A total of 3,814 cases tested positive for THC above 1 ng/ml.

These cases were then evaluated as to whether the THC concentrations exceeded certain thresholds, specifically, the 2 ng/ml per se threshold applied in Ohio and Nevada and the 5 ng/ml threshold applied in Colorado and Washington State. The results showed that a sizeable proportion (24.2%) of all drivers (who were suspected of marijuana-impaired driving), had blood THC concentrations below the per se

threshold in Ohio and Nevada, while an even larger proportion (62.8%) had concentrations below the per se threshold in Washington and Colorado.

The adoption of a 5 ng/ml per se law for THC would appear to result in the exclusion of a large number of drivers who law enforcement officers believe to be impaired by marijuana but whose blood THC concentrations will fall below this artificial per se threshold during the minimum 1 - 2 or more hours it will take to collect a blood sample following a stop, investigation and arrest. This will place a large burden of the officer to make the case through objective evidence of impairment along with signs and symptoms associated with marijuana use. The blood THC concentrations will often impede, rather than assist, in making the case to a judge or jury who has to determine whether a suspect is impaired (under the influence) as a result of their marijuana use (Logan, 2015).

Another recent study conducted using Washington State data was designed to examine whether the concentration of THC in a drivers blood was a reliable indicator of impairment. This study used 602 drivers arrested for impaired driving in which only THC was detected, with a sample of 349 drug-free control drivers, for which the subject's performance in the DRE exam were available. Results showed significant differences in the THC positive and negative drivers in terms of poorer performance on the psychophysical tests (walk-and-turn test, one-leg-stand test, and finger-to-nose test) along with indicators like red bloodshot and watery eyes, eyelid tremor, lack of convergence and rebound dilation. Having found differences between THC positive and THC negative drivers, the relationship between blood THC concentration and performance on tests for impairment was examined. Poor correlation between THC concentration and performance was found, which again indicates that blood THC level is not a reliable indicator of impairment.

Finally, an assessment of whether the combination of the physiological, cognitive and psychomotor indicators could reliably predict whether the driver's THC concentration was above or below 5 ng/ml threshold was conducted. No differences were found except for the finger-to-nose test. Some individual signs, symptoms, and tests had weak correlations with the THC concentration being above or below the threshold, but none of them met basic sensitivity levels for correctly predicting impairment status. The conclusion of the study was that "there is no evidence from the data collected, particularly from the subjects assessed through the DRE exam, that any objective threshold exists that establish impairment base on THC concentrations in suspects placed under arrest for impaired driving" (Logan, Kacninko, and Beirness, 2016).

A third study that also made use of Washington State data involved drivers in crashes and/or arrested for suspected driving under the influence, who were investigated by the Washington State Patrol in which blood samples were tested for the presence of alcohol and other drugs (including marijuana) during the time period 2005 – 2014. An interesting facet of this study was an estimate of time between the crash or arrest and when the blood draw occurred. Time to the blood draw was not always possible to calculate due to inadequacies in the records. The median time to draw blood was 165 minutes (almost three hours). The median estimated time to draw blood for THC-positive drivers was 139 minutes. Drivers negative for THC (but positive for a THC metabolite carboxy-THC) was 175 minutes. This study found a clear relationship between the time that is required to do a blood draw and THC concentration, where the longer time to the blood draw the lower the THC concentration (Banta-Green, Rowhani-Rahbar, Ebel, Andris, and Qiu, 2016).

Methods for Increasing Data Collection Regarding the Prevalence and Effects of Marijuana-Impaired Driving

Encourage States to Collect Data Regarding the Prevalence of Marijuana Use by Drivers and Among Those Arrested for Impaired Driving

There is a need to improve data collection regarding the prevalence and effects of marijuana-impaired driving. NHTSA has collected some data on the prevalence of marijuana use by drivers on a national basis, though NHTSA has been prohibited from continuing to collect this information.¹ In contrast, there is little State level data about the prevalence of use of marijuana by drivers being collected. As States continue to change their laws regarding marijuana use in general and as it relates to driving, this lack of State level data prevents evaluation of the effect of policy changes on driver behavior, including willingness to drive while under the influence of marijuana, as well as the effect of marijuana on crashes, deaths and injuries.

While assessing the number of people driving impaired by marijuana is not currently feasible, a first step is to measure the number of drivers positive for THC on our nation's roads or on a State's roads. As the number of THC positive driver's increases, it is likely that the number of marijuana-impaired drivers will also increase. Measuring the prevalence of THC positive drivers is currently feasible as shown by NHTSA's two most recent national roadside surveys of alcohol and drug prevalence conducted in 2007 and 2013-2014, and the two State surveys of the prevalence of alcohol and drug positive drivers.

Reliable trend data on the prevalence of marijuana positive drivers at the State level would allow for the evaluation of effects of marijuana laws such as:

- Therapeutic marijuana use laws
- *Per Se* limits for marijuana (THC)
- Decriminalization of personal use of marijuana
- Legalization of personal recreational use of marijuana

For example, State surveys could assess the effect of legalized recreational marijuana use on the number or percentage of people driving after using marijuana. However, such studies require both pre- and post-legalization data. Similarly, without consistent THC testing of impaired driving arrestees over time, reports that compare THC positive rates before and after a policy has gone into effect are very difficult to interpret, as they may simply reflect increased testing rates.

We recommend that States be encouraged to conduct prevalence studies of the number and proportion of drivers testing positive for THC. Due to the current Congressional prohibition¹ on NHTSA conducting national studies of alcohol and drug use by drivers, national data will not be available.

States that do not distinguish between drug-impaired and alcohol-impaired driving in arrest or disposition data significantly limit their ability to assess the extent of drug-impaired driving and evaluate the impact of countermeasures. Similarly, the lack of standardized and complete State record systems limits NHTSA's ability to make clear inferences about the scope of the national drug-impaired-driving problem.

¹ – PL 114-113, Division L, Title I, Sec. 142 (12/18/2015) prohibits NHTSA from using FY 2016 funds to conduct national roadside studies of alcohol and drug use by drivers.

Establishing and maintaining Statewide arrest data would allow States and others to evaluate the effectiveness of law enforcement programs on impaired driving, such as the impact of the DEC program on DUID arrest rates and convictions. Similarly, accurate and complete data about arrests and convictions for drug-impaired driving would allow documentation of the effects of drug per se statutes on arrest and convictions.

NHTSA recommends the following data and record system improvements:

- States should develop record systems that distinguish among alcohol, drugs, or both for impaired driving cases. These records should be integrated into computerized data systems of statewide arrest records, the court record systems, and motor vehicle records. One way to accomplish this would be to have separate offenses for driving impaired by alcohol and driving impaired by drugs.
- State records systems should document which drugs are used by drug-impaired drivers. This information would be helpful for law enforcement, toxicologists, and prosecutors.
- Standard toxicological screening and confirmation procedures should be developed for drug testing laboratories to use in identifying and confirming the presence of drugs that impair driving. These methods should include standard analytic procedures and minimum detection thresholds. There also should be training requirements for the personnel operating these tests.

In addition to these data and record system needs, NHTSA recommends the following change in State statutes:

- State statutes should be amended to provide separate and distinct offenses and sanctions for alcohol- and drug-impaired driving that could be applied individually or in combination to a single case. This would provide an incentive for law enforcement officers to pursue a possible drug-impaired driving charge even when a BAC equal to or above the limit of .08 g/dL has already been established.

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Appendix 1

Brief Description of the National Roadside Survey Procedure

The National Roadside Survey is a nationally representative survey of driver alcohol and drug use. It uses a multi-stage sampling procedure to select survey locations in 60 Primary Sampling Units (PSU) across the continental U.S. At each PSU, five actual survey locations were selected at random based on roadway type and safety considerations.

The survey is conducted off of the roadway in an adjacent parking area.

As a driver approaches a survey site they will pass several large orange construction style signs that say "*Paid Volunteer Survey*" and one illuminated variable message board sign also saying they are approaching a paid volunteer survey site. As the drivers reached the survey site, there was another large orange sign saying "*Paid Volunteer Survey*" at the entrance to the survey site. In the survey site facing approaching traffic is a large banner that says "*National Roadside Survey*" (approximately three feet by five feet). Typically there are flares placed in the roadway as the motorist approached the survey site. For safety purposes, where there were multiple lanes of traffic approaching the survey site, traffic may have been diverted to a single curbside lane through use of large orange traffic cones.

The typical survey site accommodated approximately eight cars at a time. When the survey parking places were occupied, no additional vehicles were allowed into the survey site (approaching vehicles were waved on to continue down the street). When a survey team member was available, the next eligible car was allowed into the survey site (waved in at the curb cut entrance to the parking area). This was done so that someone was immediately available to speak to the driver of a car that pulled into the survey site. Drivers of trucks or commercial vehicles were not eligible to participate.

As soon as a driver pulled into the survey site a survey team member approached their vehicle, greeted them and briefly explained what the survey was all about. They were asked if they wished to participate, if they agreed they were directed into one of the parking places. If they were not interested in participating they were thanked for stopping by and directed out of the survey site back onto the street.

At each survey site there were two law enforcement officers, in uniform, with marked police vehicles. The officers and vehicles were not allowed in the survey site but were located adjacent to the survey site where they were clearly visible. Depending on the local law enforcement agency practices and procedures, the police vehicle might have had their emergency lights flashing. Some law enforcement agencies insisted that their officers (rather than a survey team member) direct traffic at the entrance to the survey site (either waving an eligible vehicle into the site or waving approaching vehicles to not stop or attempt to enter the survey site when all of the survey team members were busy). The officers were present for the safety of the survey team and participants.

After hearing a description of the study purpose and procedure, the driver had to provide verbal consent in order to participate. During the survey the drivers were asked a number of questions, to provide a breath sample, oral fluid sample and blood sample. At each stage they had to verbally acknowledge they understood what had been told to them and consented to continue. The driver was free to decline any part of the survey while completing the rest of the survey.

During the 2013-2014 National Roadside Survey a small number of drivers generated some sensational and inaccurate publicity about the survey. Unfortunately, these individuals garnered fairly extensive publicity. No attempt to discern the accuracy of these reports were made before they were recirculated through social media and as “news reports.” In a subsequent study using essentially the same procedures, extensive publicity was generated in advance of the study in order to prevent misinformation being spread. State and local press were invited to attend a “mock” survey site and go through the study protocol themselves. During and after this subsequent roadside survey there were no complaints or inaccurate stories spread by the media.



BACKGROUND

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The Need to Treat Driving Under the Influence of Drugs as Seriously as Driving Under the Influence of Alcohol

Paul J. Larkin, Jr., Robert L. DuPont, MD, and Bertha K. Madras, PhD

Abstract

After 40 years of education, prevention, and intervention by law enforcement authorities, American society has seen a significant decline in alcohol-related crashes and fatalities. But various drugs can also severely impair the brain, and drugged driving can be as deadly as drunk driving. It is time to address the complex problem of drugged driving and commit ourselves to keeping that preventable behavior from offsetting the reduction in morbidity and mortality that our efforts against drunk driving have produced. Reasonable steps can be taken to keep someone from maiming or killing innocent people by using drugs and driving. We should not let the perfect be the enemy of the good—certainly not where what is good and doable will save lives.

Driving Under the Influence of Alcohol (DUI or DUIA)

Ever since Noah became the first vintner,¹ Western society has known that alcohol impairs one's judgment. In the first century A.D., Flavius Josephus expresses the need to teach one's children to drink wine in moderation.

The disabling effect of alcohol is particularly evident and especially dangerous when a person gets behind the wheel of a multi-ton steel vehicle while under its influence.² Alcohol-impaired driving is dangerous to the driver, any passengers travelling with him or her, anyone else on the roadway, and pedestrians. Alcohol hampers attention, signal detection, reaction time, hazard perception, object-tracking skills, concentration, and hand-eye coordination.³ Aggravating the impairing effects of alcohol are its abilities to reduce the perceived negative consequences of risk-taking and to "sneak up" on a driver by degrading his driving skills before he becomes aware of its effect.⁴

This paper, in its entirety, can be found at <http://report.heritage.org/bg3316>

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KEY POINTS

- For 40 years, American society has dedicated itself to addressing the problem of drunk driving through education, prevention, and intervention by law enforcement authorities.
- As a result, we have witnessed a considerable decline in alcohol-related crashes and fatalities.
- Physicians, scientists, policymakers, and government officials also agree that driving while drugged is likewise a danger to drivers, passengers, pedestrians, and their families regardless of their views about drug legalization and regardless of where they live.
- We should now commit ourselves to an effort to keep that preventable behavior from offsetting the reduction in morbidity and mortality that we have seen from our efforts to stop drinking and driving.
- Reasonable steps can be taken to keep someone from maiming or killing innocent people by using drugs and driving. We should not let the perfect be the enemy of the good—certainly not where what is good and doable will save lives.

Drunk driving imposes severe costs on the parties injured or killed in an alcohol-induced motor vehicle collision, as well as on the nation as a whole. Approximately 29 people die every day in alcohol-impaired vehicle crashes: one every 50 minutes or more than 10,000 per year.⁵ Using the most recent cost data, alcohol-induced morbidity and mortality costs the nation \$44 billion per year,⁶ which dwarfs the revenue earned from alcohol taxes.⁷

To address that problem, states long ago prohibited “driving under the influence” of alcohol or “driving while intoxicated,” better known by their acronyms DUI or DWI.⁸ Based on compendia of research on alcohol-impaired driving, the U.S. Department of Transportation arrived at two seminal conclusions:

- Evidence of impairment at blood alcohol concentrations (BACs) of 0.05 grams per deciliter (g/dL) and higher was found with respect to reaction time, tracking, concentrated attention, divided attention, information processing, vision, perception, and psychomotor performance and on various driver performance measures;⁹ and
- Every state should consider adopting illegal per se laws at the 0.08 level for drivers aged 21 and older.¹⁰

In response, all 50 states and the District of Columbia have made it a crime to drive with a specific blood-alcohol concentration level of 0.08 g/dL.¹¹ Those laws deem a person intoxicated as a matter of law, regardless of whether he was impaired as a matter of fact, if his BAC level equals or exceeds that concentration.

The state and federal governments are not the only ones that have fought alcohol-impaired driving. The aggressive efforts of private organizations such as Mothers Against Drunk Driving have changed the societal attitude toward drunk driving.¹² What was once treated as an anodyne peccadillo or an occasion for humor¹³ is now properly seen as a serious crime.¹⁴

Driving Under the Influence of Drugs (DUID)

Numerous substances aside from alcohol can also impair a person's driving skills, including a variety of illicit drugs as well as lawfully prescribed tranquilizers and soporifics (sleep-inducing drugs).¹⁵ For that reason, states have made it a crime to drive under their influence.¹⁶

The problem of “drugged driving” or DUID is not a trivial matter. The National Highway Traffic Safety Administration conducted a roadside survey in 2013 and 2014 and discovered that 20 percent of drivers surveyed tested positive for potentially impairing drugs.¹⁷ It is quite troubling to find that one out of every five drivers has used a drug that could adversely affect his ability to drive safely.

Three of the drugs that are particularly troublesome are benzodiazepines (minor tranquilizers); opiates (or opioids);¹⁸ and marijuana. The following sections discuss the available evidence regarding their role in drug-impaired driving.¹⁹

Benzodiazepines. Two meta-analyses showed that benzodiazepines are associated with an elevated risk of traffic crashes and an increase in “accident driver-responsibility.” Co-ingestion of benzodiazepines and alcohol was associated with a 7.7-fold increase in the accident risk.²⁰

Opioids. Opioids, even when lawfully prescribed by a physician, can impair the skills and judgment necessary to handle a motor vehicle safely.²¹ Given the rise in the nonmedical use of prescription drugs and use of illegal opioids and related analogues (for example, heroin and fentanyl) over the past decade, it should come as no surprise that over the past year, there have been numerous media reports of drivers being involved in wrecks where opiates or opioid drugs were involved.²² As proof, a 2017 study published in the *American Journal of Public Health* found a sevenfold increase from 1975 to 2015 in the prevalence of opioids in the blood of drivers involved in fatal crashes in several states.²³ The reports also stated that hydrocodone, oxycodone, and morphine were the most commonly detected prescription opioids.²⁴

Marijuana. Marijuana can also impair a driver's ability to handle a vehicle safely.²⁵ Given the decisions by various states over the past 20 years to authorize the medical or recreational use of marijuana, most of the discussion of driving under the influence of drugs (DUID) has focused on the impairing effect of its active ingredient, Δ^9 -tetrahydrocannabinol or THC.²⁶ THC hampers the ability of drivers to process and respond to unexpected or rapidly changing driving scenarios quickly and effectively.²⁷

Polydrug Use. The evidence also shows that people who use drugs, whether illicit or legal, often do not limit their intake to one particular drug.²⁸ Polydrug use is common, perhaps particularly in the case

of alcohol and marijuana.³⁹ Alcohol and marijuana are the two most frequently used substances that degrade a driver's ability to operate a vehicle. Their combination can have an additive (if not synergistic) effect on a driver, leaving him incapable of driving safely even though neither drug alone might impair his ability to handle a vehicle.³⁰ A person can be incapable of driving safely even though his BAC level is only 0.05 g/dL if he has also recently consumed marijuana and there is THC in his brain.

The result is this: Studies indicate that the combination of alcohol and THC can be impairing even though the amount of either drug consumed by itself might not cause the same degree of deterioration in an average driver's skills.³¹ The extent of current polysubstance use, especially with a rising tide of marijuana and opioid use, is unknown. The last well-designed roadside tests for polysubstance use were performed in 2007.

Contemporary Problems: Opioid Abuse and State Marijuana Legalization Initiatives

State marijuana legalization measures have exacerbated the DUID problem.³² In May 2016, the American Automobile Association Foundation for Traffic Safety concluded that after Washington State legalized marijuana, the proportion of fatal crashes involving drivers who had used that drug doubled.³³ A recent study by Smart Approaches to Marijuana (SAM) concluded that state marijuana legalization initiatives have contributed to increased risk of morbidity and mortality on their roadways.³⁴ "Drugged driving and motor vehicle fatalities have increased in states that have legalized recreational marijuana,"³⁵ SAM concluded. Relying on the data collected from the Fatality Analysis Reporting System, SAM further reported that approximately 50 percent of fatal crashes nationwide involved drivers who tested positive for THC.³⁶

According to SAM, the numbers in Colorado were particularly troublesome. From 2013 to 2015, there was an increase of 88 percent in the number of Colorado drivers testing positive for marijuana.³⁷ The four-year averages before and after Colorado legalized marijuana in 2012 saw a 66 percent increase in marijuana-related traffic deaths.³⁸ Drivers, passengers, and other motorists were not the only parties at risk. Other states that legalized recreational marijuana also saw an increase in pedestrian fatalities.³⁹

Admittedly, the evidence is not dispositive that recent drug use inevitably and invariably *causes* motor vehicle collisions; there is disagreement on that score.⁴⁰ For example, a recent study for the National Bureau of Economic Research concluded that there was no material difference between the marijuana-related, alcohol-related, and overall traffic fatality rates before and after the Colorado and Washington marijuana legalization initiatives went into effect.⁴¹ Advocates of marijuana legalization use that study and others to argue that there is no proven causal relationship between the new state medical and recreational marijuana laws and an increase in highway morbidity or mortality. Inconsistencies of testing for other drugs if alcohol is found above the legal limit may confound attribution of crashes to other drugs in the system. Also, THC concentrations are rising rapidly; levels of cannabidiol, which can attenuate the florid pharmacological actions of THC,⁴² are declining steeply, and traffic morbidity and mortality records of five to 10 years ago may not reflect this growing trend.⁴³

But there are two other factors to consider. The first one is that different states are entitled to hold different opinions regarding their willingness to expose innocent parties to the risk of being injured or killed by a driver whose ability to operate a vehicle safely has been impaired by a lawful or illicit drug.⁴⁴ The second factor is that there is unanimity regarding a crucial moral judgment: No one should drive under the influence of any substance that could impair a motorist's ability to operate his vehicle safely. Numerous government authorities⁴⁵ and private experts⁴⁶ have recommended against anyone driving while under the influence of any impairing drug, illicit or legal. Even parties who advocate the liberalization of current federal and state marijuana laws recognize that no one should drive while impaired by marijuana.⁴⁷

The Need to Treat DUID and DUIA as Posing Equally Serious Public Safety Risks

Unfortunately, there is no easy solution to the DUID problem. Nonetheless, some reasonable steps can be taken to reduce the risk of drug-involved collisions. Below is a list of proposals that should occasion a consensus among the parties interested in addressing this problem, as well as bipartisan support in the legislatures and elsewhere in government. Each one will take a step toward improving roadway safety. Each one deserves serious consideration at all levels of government.

There is a particular need for Congress to address this problem. Interstate highways have that name for a reason. People who drive while under the influence of marijuana do not limit their trips to states that have legalized that drug, nor do people who use potentially impairing prescription medications drive only within their home states. They cross state lines, sometimes several, sometimes far from home. The result is to put at risk residents of states who had no say over whether marijuana should be legalized or whether a person should have let someone else drive while he was using an impairing prescription drug. No one state or group of states can adequately address this problem. While any one state can adopt the proposals mentioned below, only Congress can address the matter nationally.

Interstate roadways are arteries of national commerce, and Congress can regulate the safety of travel along those roads under the Commerce Clause.⁴⁸ Congress therefore could direct the states to adopt these proposals.⁴⁹ But there is another option available to Congress: It can condition the receipt of at least a portion of federal highway funds on every state's compliance with these proposed safety measures.

Precedent exists for that approach. In the 1980s, Congress enacted legislation establishing a national minimum drinking age of 21 and penalizing states that decline to comply with that mandate by directing the withholding of a small portion of the highway funds that the state otherwise would receive.⁵⁰ The states argued that the statute interfered with their prerogative, granted by the Twenty-First Amendment,⁵¹ to decide how to regulate the in-state consumption of alcohol and also imposed an "unconstitutional condition" on their receipt of federal funds, in violation of the Tenth Amendment.⁵² In *South Dakota v. Dole*,⁵³ however, the Supreme Court of the United States upheld the constitutionality of that law. The Court ruled both that Congress has the authority to condition the receipt of a portion of federal highway funds on a state's compliance with a federal minimum drinking age requirement and that Congress's decision to impose that mandate did not violate the Tenth Amendment because it was a reasonable condition on the receipt of federal funds.⁵⁴

The *South Dakota v. Dole* rationale would apply here. States that legalize the recreational or medical use of marijuana place at risk drivers, passengers, and pedestrians in other states. It is also reasonable

to demand that states comply with the conditions noted below as a prerequisite to receipt of all federal highway funds for much the same grounds that the Court found persuasive in *South Dakota v. Dole*. Finally, such a condition would not trespass on the rights of drivers because driving under the influence of a drug is already unlawful in all 50 states and, in the case of drugs such as marijuana or heroin, the drug is contraband under federal law.

To be sure, the pharmacokinetics and pharmacodynamics of alcohol differ from opioids, marijuana, and other drugs. The result is that we cannot automatically apply to drugs other than alcohol the same countermeasures that we have adopted for alcohol itself. What we *can* do is treat impaired driving as a serious public safety problem regardless of the chemical structure of the compound that keeps someone from handling his vehicle safely. By so doing, we will demonstrate our commitment to lowering highway morbidity and mortality whatever the chemical agent might be that impairs safe driving.

How to Respond to the Public Safety Risks of DUID

What follows is a set of six proposals to address DUID. The common denominator is treating DUID in the same manner as DUI or DUAI. Although the procedures used in the case of alcohol-impaired driving cannot be transferred automatically to drug-impaired driving because of the different pharmacokinetics and pharmacodynamics of the two types of substances, these proposals can and should be used to address drug-impaired driving because they do not raise the problems posed by uncritical application to the very different context of DUAI protocols.

- **Proposal 1:** Apply to every driver under 21 years old who tests positive for any illicit or impairing drug, including marijuana and impairing prescription drugs, the same zero-tolerance standard specified for alcohol, the use of which in this age group is illegal.
- **Proposal 2:** Apply to every driver found to have been impaired by drugs, including marijuana, the same remedies and penalties that are specified for alcohol-impaired drivers, including administrative or judicial license revocation.

- **Proposal 3:** Test every driver involved in a crash that results in a fatality or a major traffic accident (including injury to pedestrians) for alcohol and impairing drugs, including marijuana, a panel of opioids, and prescription drugs.
- **Proposal 4:** Test every driver arrested for driving while impaired for alcohol and impairing drugs, including marijuana.
- **Proposal 5:** Use reliable oral fluid testing technology at the roadside for every driver arrested for impaired driving.
- **Proposal 6:** Develop national standardized testing, synchronize the testing with drug overdose testing, and develop a national database that collects the information for program and policy decisions.

States, as required by federal law, must have age 21 as the minimum drinking age. It is illogical to treat differently someone under that age who tests positive for heroin, other opioids, cocaine, methamphetamine, LSD, THC, or benzodiazepines, since they can impair a driver's ability to operate a vehicle and are illegal under federal law. If a state automatically suspends a driver's license for 30, 60, 90, or 180 days (or longer) if he is convicted of driving under the influence of alcohol, the state should use the same penalty for someone convicted of DUID. Polydrug use is sufficiently common that an arresting officer should test every driver involved in a crash resulting in a fatality or arrested for impaired driving not only for alcohol, but also for impairing drugs. The principal objection to testing for a wider range of drugs is financial, not legal, and the states can use federal highway funds for that purpose. Finally, the development of technology to perform roadside oral fluid testing (for example, with a buccal swab) would enable an arresting officer to obtain supportive (or nonsupportive) evidence of the presence of an impairing substance in an expeditious and relatively nonintrusive manner.⁵⁵ Together, those proposals would help address the problem that DUID poses for society.⁵⁶

Obviously, drugs differ in important ways from alcohol and differ from each other. The pharmacodynamics (what drugs do to the body) and pharmacokinetics (how the body processes drugs) of drugs are not the same, and they also differ from the cor-

responding pharmacology of alcohol. That makes it difficult to apply standardized protocols and procedures to all problems attributable to psychoactive substances.⁵⁷ But the above proposals do not make that attempt. Instead, they seek to treat substances that impair brain function—alcohol and other drugs—alike for purposes of the law of impaired driving, not for medical or scientific purposes, and focus this effort insofar as they can on how these substances endanger highway safety.

Conclusion

The paterfamilias of television's Simpson family, Homer Simpson, once said, while holding a bottle of beer in his hand, "To alcohol! The cause of, and solution to, all of life's problems."⁵⁸ He was almost half-right. Alcohol is not the solution to any of life's problems, and while it does not cause all of them, it does cause many. One of them happens far too often on our roads. We have known for more than a century that combining alcohol and motor vehicles is always highly problematic and far too often fatal. For the past 40 years, however, American society has dedicated itself to addressing that problem through education, prevention, and, when necessary, intervention by law enforcement authorities. As a result, we have witnessed a considerable decline in alcohol-related crashes and fatalities.

With regret, we have learned that various drugs can also severely impair the brain and that drugged driving can be as deadly as drunk driving. Physicians, scientists, policymakers, and government officials agree that DUID is a danger to drivers, passengers, pedestrians, and their families regardless of their views about drug legalization and regardless of where they live. There is also a societal consensus that reasonable steps to reduce that danger do exist and can be effective.

Accordingly, it is time to address the complex problem of drugged driving. We should commit ourselves to an effort to keep that preventable behavior from offsetting the reduction in morbidity and mortality that we have seen from our efforts to stop drinking and driving. Each problem deserves the same commitment. No one action could altogether eliminate drinking and driving, and American society took what steps were available to reduce its incidence where possible. We should pursue the same course for DUID. Reasonable steps can be taken to keep someone from maiming or killing innocent

people by using drugs and driving. We should not let the perfect be the enemy of the good—certainly not where what is good and doable will save lives.

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Endnotes

1. Genesis 9:20-25 (KJV); see also, e.g., JERROLD S. MEYER & LINDA F. QUENZER, *PSYCHOPHARMACOLOGY: DRUGS, THE BRAIN, AND BEHAVIOR* 266 (2d ed. 2018) (suggesting that mead might have been brewed by 8,000 B.C.).
2. See, e.g., Consensus Dev. Panel, *Consensus Report: Drug Concentrations and Driving Impairment*, 254 J. AM. MED. ASS'N 2618, 2619 (1985) [hereafter *AMA Consensus Report*] ("Traditionally, ethanol has been the drug of greatest concern in relation to driving impairment. Ethanol is by far the most frequently documented drug in fatal motor vehicle accidents."); Eric J. Gouvin, *Drunk Driving and the Alcoholic Offender: A New Approach to an Old Problem*, 12 AM. J.L. & MED. 99, 100 (1986) (quoting a 1904 editorial from the *Quarterly Journal of Inebriety*) ("Inebriates and moderate drinkers are the most incapable of all persons to drive motor wagons. The general palsy and diminished power of control of both the reason and senses are certain to invite disaster in every attempt to guide such wagons.") (internal quotation marks omitted).
3. See, e.g., ROBERT L. DUPONT, *THE SELFISH BRAIN: LEARNING FROM ADDICTION* 135 (Rev. ed., 2000); R. Andrew Sewell et al., *The Effect of Cannabis Compared with Alcohol on Driving*, 18 AM. J. ON ADDICTIONS 185, 188 (2009).
4. See, e.g., DUPONT, *supra* note 3, at 134-36; Robert D. Budd et al., *Drugs of Abuse Found in Fatally Injured Drivers in Los Angeles County*, 23 DRUG & ALCOHOL DEPENDENCE 153, 155 (1989).
5. NAT'L HIGHWAY TRAFFIC SAFETY ADM'N, DEPT OF TRANSP., *DRUNK DRIVING* (2017) [hereafter *NHTSA, DRUNK DRIVING*] (describing 2016 data), <https://www.nhtsa.gov/risky-driving/drunk-driving>.
6. *Id.*
7. See Paul J. Larkin, Jr., *Swift, Certain, and Fair Punishment—24/7 Sobriety and HOPE: Creative Approaches to Alcohol- and Illicit Drug-Using Offenders*, 105 J. OF CRIM. L. & CRIMINOLOGY 39, 42-43 (2016).
8. See, e.g., Motor Vehicle Act of 1915, CAL. STATE LAWS 1915 § 17, as amended by 1915 Cal Stat. 214 ("No person who is under the influence of intoxicating liquor and no person who is an habitual user of narcotic drugs shall operate or drive a motor or other vehicle on any public highway within this state."); An Act Relative to Automobiles and Motor Cycles, ch. 412, § 4, 1906 Mass. Acts 419, 422 (making the operation of an automobile or motorcycle "while under the influence of intoxicating liquor" a misdemeanor); Robert L. DuPont et al., *The Need for Drugged Driving Per Se Laws: A Commentary*, 13 TRAFFIC INJURY PREVENTION 31, 32 (2012) (summarizing state laws prohibiting alcohol-impaired driving); Robert B. Voas et al., *Prescription Drugs, Drugged Driving and Per Se Laws*, 19 INJ. PREVENTION 218, 218 (2014) ("Impaired driving laws date back to the early part of the 20th century when states first criminalized alcohol-impaired driving."). For an example of a current statute, see VA. CODE ANN. § 18.2-266 (2017) ("It shall be unlawful for any person to drive or operate any motor vehicle, engine or train (i) while such person has a blood alcohol concentration of 0.08 percent or more by weight by volume or 0.08 grams or more per 210 liters of breath as indicated by a chemical test administered as provided in this article, (ii) while such person is under the influence of alcohol....").
9. See HERB MOSKOWITZ & CHRISTOPHER D. ROBINSON, *EFFECTS OF LOW DOSES OF ALCOHOL ON DRIVING RELATED SKILLS: A REVIEW OF THE EVIDENCE*, DOT HS 807 280 (July 1988). This large-scale literature review was conducted on the effects of alcohol on driving skills. Evidence of impairment at blood alcohol concentrations (BACs) of 0.05 g/dL and higher was found with respect to reaction time, tracking, concentrated attention, divided attention, information processing, vision, perception, and psychomotor performance and on various driver performance measures. In many of these functional areas, impairment was found to appear at BACs of 0.02 or 0.03. The study concluded that there is no "safe" limit of BAC, other than zero, for driving-related skills.
10. See MONROE B. SNYDER, NAT'L HIGHWAY TRAFFIC SAFETY ADM'N, *DRIVING UNDER THE INFLUENCE: A REPORT TO CONGRESS ON ALCOHOL LIMITS*, DOT HS 807 879 (Oct. 1992). This report was prepared in response to a congressional mandate to conduct a study to determine the BAC at or above which an individual who was operating a motor vehicle should be considered to be driving under the influence. The report discusses scientific literature on the influence of BAC on driver performance and crashes, reviews the existing BAC legislation, and discusses data on the expected institutional responses to alternative limits such as 0.08, 0.04, and 0.00 g/dL. The report concluded that all states should consider adopting illegal per se laws at the 0.08 level for drivers aged 21 and older.
11. See 23 U.S.C. § 163(a) (2012); *Missouri v. McNeely*, 569 U.S. 141, 160 & n.8 (2013); 23 C.F.R. § 1225.1 (2012); NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEPT OF TRANSP., *DOT HS 811 870, ALCOHOL-IMPAIRED DRIVING 1* (2013).
12. See BARRON H. LERNER, *ONE FOR THE ROAD: DRUNK DRIVING SINCE 1900* (2012).
13. The 1981 film *Arthur* about the drunken life of the fictional character Arthur Bach is a classic example of that now-deplored mindset.
14. See, e.g., Paul J. Larkin, Jr., *Liberalizing Marijuana Use and Improving Driving Safety: Two Contemporary Public Policies on a Collision Course*, HERITAGE FOUND. LEGAL MEMORANDUM NO. 156 (June 25, 2015), http://thf_media.s3.amazonaws.com/2015/pdf/LM156.pdf.
15. See, e.g., GOVERNORS HIGHWAY SAFETY ASS'N, *DRUG-IMPAIRED DRIVING: A GUIDE FOR STATES* (Apr. 2017); NAT'L HIGHWAY TRAFFIC SAFETY ADM'N, DEPT OF TRANSP., *DRUGGED DRIVING* (2017) [hereafter *NHTSA, DRUGGED DRIVING*] ("Prescription drugs, over-the-counter medications, and illegal drugs may cause impairment alone or in combination with each other and/or with alcohol."), <https://www.nhtsa.gov/risky-driving/drugged-driving>; MARCELLINE BURNS, *MEDICAL-LEGAL ASPECTS OF DRUGS* 153 (2003) ("Without exception, all illicit drugs have the potential to impair the cognitive and behavioral skills that allow a person to engage in normal daily activities, such as driving and working"); Markku Linnoila, *Tranquilizers and Driving*, 8 ACCID. ANAL. & PREV. 15 (1976).
16. See, e.g., VA. CODE ANN. § 18.2-266 (2014) ("It shall be unlawful for any person to drive or operate any motor vehicle, engine or train...(ii) while such person is under the influence of any narcotic drug or any other self-administered intoxicant or drug of whatsoever nature, or any combination of such drugs, to a degree which impairs his ability to drive or operate any motor vehicle, engine or train safely, (iv) while such

- person is under the combined influence of alcohol and any drug or drugs to a degree which impairs his ability to drive or operate any motor vehicle, engine or train safely, or (v) while such person has a blood concentration of any of the following substances at a level that is equal to or greater than: (a) 0.02 milligrams of cocaine per liter of blood, (b) 0.1 milligrams of methamphetamine per liter of blood, (c) 0.01 milligrams of phenylcyclidine per liter of blood, or (d) 0.1 milligrams of 3,4-methylenedioxymethamphetamine per liter of blood.”); Robert B. Voas et al., *Prescription Drugs, Drugged Driving and Per Se Laws*, 19 *INJ. PREVENTION* 218, 218 (2014).
17. See NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., DEP’T OF TRANSP., DOT HS 811 415, *DRUG INVOLVEMENT OF FATALITY INJURED DRIVERS 1* (2010) (“Nationwide in 2009, 63 percent of fatally injured drivers were tested for the presence of drugs. Overall, 3,952 fatally injured drivers tested positive for drug involvement in 2009. This number represents 18 percent of all fatally injured drivers (Table 1) and 33 percent of those with known drug test results (Table 2) in 2009.”).
 18. Opiates are derivatives of the resin of poppy plants. When manufactured into morphine or codeine, they are used as painkillers. Opiates can also be manufactured into heroin, which is a Schedule I controlled substance and cannot be lawfully prescribed in the United States. See 21 U.S.C. § 841 (2012). Opioids are synthetic painkillers that are manufactured in a laboratory. Examples are OxyContin, Methadone, and Buprenorphine. Hereafter, the term “opioids” will be used to refer to both types of drugs.
 19. Benzodiazepines, opiates, and cannabis do not exhaust the range of possibilities. Hallucinogens, such as lysergic acid diethylamide, better known as LSD, along with the “dizzying alphabet soup of chemical variations” on LSD and other hallucinogens, impair safe driving as well. DuPont, *supra* note 3, at 189; see *id.* at 187–96.
 20. See Tharaka L. Dassanayake et al., *Effects of Benzodiazepines, Antidepressants and Opioids on Driving: A Systematic Review and Meta-analysis of Epidemiological and Experimental Evidence*, 34 *DRUG SAFETY* 125 (2011).
 21. See, e.g., JOHN KAPLAN, *THE HARDEST DRUG: HEROIN AND PUBLIC POLICY* 176 (1983) (“Although, in the most crowded inner cities, it is likely that most addicts do not drive cars, there are many, perhaps a majority, in places such as California, who do. The difficulty here is that many addicts on heroin are not in good enough condition to drive safely.... Even though addicts who are taking stable doses of heroin will not be in good enough condition to drive just after their injection, and should they be delayed in traffic on the way to the clinic, the beginnings of withdrawal may make them a danger then.”); MEYER & QUENZER, *supra* note 1, at 308–09 (describing the euphoric, dysphoric, and sedative effects of opium); Stanford Chihuri & Guohua Li, *Trends in Prescription Opioids Detected in Fatally Injured Drivers in 6 US States: 1995–2015*, 107 *AM. J. PUB. HEALTH* 1487, 1487 (2017) (“Prescription opioids (e.g., oxycodone, hydrocodone, and methadone) are potent drugs...[and] can cause drowsiness, nausea, and impaired cognition and interfere with executive functioning. Hence driving under the influence of prescription opioids is a serious safety concern.”) (footnote omitted).
 22. See, e.g., Shaddi Abusaid, *DA: Driver Under Influence of Pills Gets 15 Years for Fatal Wreck*, MARIETTA DAILY JOURNAL, Apr. 1, 2018, http://www.mjonline.com/news/da-driver-under-influence-of-pills-gets-years-for-fatal/article_fa0ed6f0-36b4-11e8-8b1d-07e084fc513d.html; Andy Brownfield, *Motorist Receives Maximum Sentence in Hit-Skip that Killed OTR Business Owner*, CINCINNATI BUSINESS COURIER, Feb. 23, 2018, <https://www.bizjournals.com/cincinnati/news/2018/02/23/motorist-receives-maximum-sentence-in-hit-skip.html>; Bucks County District Attorney’s Office, *Impaired Driver Who Killed 22-Year-Old Gets 17.5 to 40 Years*, Jan. 29, 2018, <https://bucks.crimewatchpa.com/da/29567/post/impaired-driver-who-killed-22-year-old-gets-17-5-40-years>; Chris Gadd, *Dye Guilty of Vehicular Homicide in Opioid-Influenced Dickson Co. Wreck*, TENNESSEAN, Apr. 20, 2017, <https://www.tennessean.com/story/news/local/dickson/2017/04/20/dye-guilty-vehicular-homicide-opioid-influenced-dickson-co-wreck/100696286/>; Carl Hessler, Jr., *Bucks Man Awaits Fate for DUI Crash that Injured 2 in Hatfield*, THE MERCURY, March 14, 2018, available at <http://www.pottsmc.com/general-news/20180314/bucks-man-awaits-fate-for-dui-crash-that-injured-2-in-hatfield>; Lynn Hulsey, *Driver in Crash that Blocked I-70 Used Fentanyl Earlier, Patrol Says*, DAYTON DAILY NEWS, Aug. 11, 2017, <https://www.daytondailynews.com/news/crime-law/driver-crash-that-blocked-used-fentanyl-earlier-patrol-says/4aQCIGf9uK1OP9RKHso3JO/new.html>; Justin Kmitch, *Intoxicated Driver Sentenced to 11 Years in Fatal Burr Ridge Crash*, DAILY HERALD, Feb. 5, 2018, <http://www.dailyherald.com/news/20180205/intoxicated-driver-sentenced-to-11-years-in-fatal-burr-ridge-crash>; Kevin Martin, *Matthew Glaze of Elyria Guilty on All Counts in Fatal Crash*, THE MORNING JOURNAL, Jan. 30, 2018, <http://www.morningjournal.com/article/MJ/20180131/NEWS/180139855>; Diane Pineiro-Zucker, *Opioid-Impaired Driver Gets up to 7 Years in Prison for Crash that Killed Phoenixia Woman*, DAILY FREEMAN, Oct. 17, 2017, <http://www.dailyfreeman.com/article/DF/20171017/NEWS/171019705>; Tracey Read, *Eastlake Woman Admits Causing Wrong-Way Crash on Interstate 90 that Injured Three*, NEWS HERALD, Feb. 26, 2018, <http://www.news-herald.com/article/HR/20180226/NEWS/180229559>; Catalina Righter, *Man Pleads Guilty to Negligent Homicide Charge in Death of Unborn Baby*, CARROLL CNTY. TIMES, Mar. 6, 2018, <http://www.carrollcountytimes.com/news/crime/cc-bellusci-plea-20180306-story.html>; Mindy Schack & Noelle Medina, *Virginia Anderson Sentenced to 7 Years for Fatal DUI Crash*, KRCRTV, June 22, 2017, <http://krcrtv.com/news/shasta-county/virginia-anderson-sentenced-to-7-years-for-fatal-dui-crash>; Jim Schultz, *Redding Man Sentenced to 15 Years to Life for Fatal Wreck*, RECORD SEARCHLIGHT, Mar. 16, 2018, <https://www.redding.com/story/news/local/2018/03/16/redding-man-sentenced-15-years-life-fatal-wreck/433980002/>; Dispatch Staff, *Cops and Courts—Fine, Probation After Crash*, THE DISPATCH, Jan. 26, 2018, <https://mdcoastdispatch.com/2018/01/25/cops-courts-january-26-2018/>; Walt Zwirko, *Car Thief Gets 30 Years for Crash that Kills Son in Denison*, KTEN NEWS, Mar. 12, 2018, <http://www.kten.com/story/37707983/car-thief-gets-30-years-for-crash-that-killed-son-in-denison>; Stephanie Weaver, *Mohnton Man Admits to Driving Under the Influence of Drugs*, READING EAGLE, Dec. 22, 2017, <http://www.readingeagle.com/news/article/mohnton-man-admits-to-driving-under-the-influence-of-drugs>.
 23. See Chihuri & Li, *supra* note 21, at 1491 (“During 1995 to 2015, there has been a 7-fold increase in the prevalence of prescription opioids detected in drivers who died within 1 hour of the crash in California, Hawaii, Illinois, New Hampshire, Rhode Island, and West Virginia.”).
 24. *Id.* at 1490, 1491.
 25. The psychoactive ingredient in marijuana is Δ^9 -tetrahydrocannabinol (THC), although other cannabinoids also have pharmacological effects. An intoxicating dose of THC is extremely small: just 100–200 micrograms (μ g). THC affects receptors in the brain in regions involved in

- cognition, memory, reward, pain perception, and motor coordination. The THC content in marijuana varies according to phenotype, soil, climate, and cultivation technique. The highest concentration of THC is in the flowering top of the female plant. See, e.g., BRITISH MED. ASS'N, THERAPEUTIC USES OF CANNABIS 7, 10-11 tbl.1 (1997) [hereafter BRITISH MED. ASS'N]; LESLIE L. IVERSEN, THE SCIENCE OF MARIJUANA 27-65, 189 (2d ed. 2008); Wayne Hall & Louisa Degenhardt, *Adverse Health Effects of Non-Medical Cannabis Use*, 374 LANCET 1383, 1383-84 (2009); Richard L. Hawks, *The Constituents of Cannabis and the Disposition and Metabolism of Cannabinoids*, in NAT'L INST. ON DRUG ABUSE, U.S. DEP'T OF HEALTH & HUMAN SERVS. THE ANALYSIS OF CANNABINOIDS IN BIOLOGICAL FLUIDS, 125, 125-26 (Richard L. Hawks ed., 1982), available at <http://archives.drugabuse.gov/pdf/monographs/42.pdf>; Zlatko Mehmedic et al., *Potency Trends of Δ⁹-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008*, 55 J. FORENSIC SCI. 1209, 1209 (2010.).
26. See, e.g., BRITISH MED. ASS'N, *supra* note 25, at 66 ("Impairment of psychomotor and cognitive performance, especially in complex tasks, has been shown in normal subjects in many tests. Impairments include slowed reaction time, short term memory deficits, impaired attention, time and space distortion, impaired coordination. These effects combine with the sedative effects to cause deleterious effects on driving ability or operation of machinery." (citations omitted)); AAA, FOUND. FOR TRAFFIC SAFETY, PREVALENCE OF MARIJUANA INVOLVEMENT IN FATAL CRASHES: WASHINGTON, 2010-2014 (2016); AAA, FOUND. FOR TRAFFIC SAFETY, CANNABIS USE AMONG DRIVERS SUSPECTED OF DRIVING UNDER THE INFLUENCE OR INVOLVED IN COLLISIONS: ANALYSIS OF WASHINGTON STATE PATROL DATA (2016); BURNS, *supra* note 15, at 153 ("Without exception, all illicit drugs have the potential to impair the cognitive and behavioral skills that allow a person to engage in normal daily activities, such as driving and working."); DUPONT, *supra* note 3, at 144; IVERSEN, *supra* note 25, at 96, 163; ROBIN ROOM ET AL., CANNABIS POLICY: MOVING BEYOND STALEMATE 15, 18-19 ("Better-controlled epidemiological studies have recently supplied credible evidence that cannabis users who drive while intoxicated are at increased risk of motor vehicle crashes[.]"); D. Mark Anderson et al., *Medical Marijuana Laws, Traffic Fatalities, and Alcohol Consumption*, 56 J. OF L. & ECON. 333 (2013); Alan W. Jones et al., *Driving Under the Influence of Cannabis: A 10-Year Study of Age and Gender Differences in the Concentrations of Tetrahydrocannabinol in Blood*, 103 ADDICTION 452, 457 (2008) ("[C]annabis is an illicit drug used by people for the primary purpose of 'getting high' and escaping from reality, and this is not compatible with performing skilled tasks such as driving...."); Robert L. DuPont et al., *Marijuana-Impaired Driving: A Path Through the Controversies*, in CONTEMPORARY HEALTH ISSUES ON MARIJUANA (Kevin Sabet & Kevin Winter eds., 2018) (forthcoming); C. Heather Ashton, *Pharmacology and Effects of Cannabis: A Brief Review*, 178 BRIT. J. PSYCHIATRY 101, 104 (2001) ("Numerous studies have shown that cannabis impairs road-driving performance and have linked cannabis use with increased incidence of road traffic accidents."); Michel Bédard et al., *The Impact of Cannabis on Driving*, 98 CANADIAN J. PUB. HEALTH 6, 8-9 (2007); Stephanie Blows et al., *Marijuana Use and Car Crash Injury*, 100 ADDICTION 605, 610 (2005) ("This population-based case-control study suggests that habitual marijuana use is associated with a 10-fold increase in the risk of car crash injury."); Franjo Grotenhermen et al., *Developing Limits for Driving Under Cannabis*, 102 ADDICTION 1910, 1912 (2007); Wayne Hall, *What Has Research Over the Past Two Decades Revealed About the Adverse Health Effects of Recreational Cannabis Use?*, 110 ADDICTION 19, 21 (2014) (finding that over the past decade, better-designed epidemiological studies and meta-analyses have found that cannabis users who drive while intoxicated increase the risk of motor vehicle crashes two to three times); Hall & Degenhardt, *supra* note 25, at 1384-85; Rebecca L. Hartman & Marilyn A. Huestis, *Cannabis Effects on Driving Skills*, 59 CLINICAL CHEMISTRY 478, 478 (2013); Herbert Moskowitz, *Marijuana and Driving*, 17 ACCIDENT ANALYSIS & PREVENTION 323, 341 (1985) ("Clearly, marijuana is a substance which produces serious behavioral toxicological effects. Any situation in which safety both for self and others depends upon alertness and capability of control of man-machine interaction precludes use of marijuana."); Ed Wood, *Skydiving Without a Parachute*, 4 J. ADDICTION MED. & THERAPY 1020 (2016); see generally Paul J. Larkin, Jr., *Medical or Recreational Marijuana and Drugged Driving*, 52 AM. CRIM. L. REV. 453, 476-77 (2015) (collecting studies). But see NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 812-355, DRUG AND ALCOHOL CRASH RISK: A CASE-CONTROL STUDY 67 (2016) (finding no significant increase in crash risk attributable to marijuana).
 27. See, e.g., NAT'L INST. ON DRUG ABUSE, MARIJUANA 10, 12-13 (Apr. 2017) [hereafter NAT'L INST., MARIJUANA] ("THC also disrupts functioning of the cerebellum and basal ganglia, brain areas that regulate balance, posture, coordination, and reaction time. This is the reason people who have used marijuana may not be able to drive safely."); Letter from Director Nora D. Volkow, in *id.* at 3 ("Because marijuana impairs short-term memory and judgment and distorts perception it can...make it dangerous to drive."); U.S. DEP'T OF HEALTH & HUMAN SERVS., NAT'L INST. ON DRUG ABUSE, DRUGFACTS: DRUGGED DRIVING 2 (2013), http://www.drugabuse.gov/sites/default/files/drugfacts_druggeddriving_2014.pdf ("Considerable evidence from both real and simulated driving studies indicates that marijuana can negatively affect a driver's attentiveness, perception of time and speed, and ability to draw on information obtained from past experiences."); WORLD HEALTH ORG., CANNABIS: A HEALTH PERSPECTIVE AND RESEARCH AGENDA 15 (1997).
 28. See Chihuri & Li, *supra* note 21, at 1487 ("Currently, about one third of fatally injured drivers in the United States test positive for nonalcohol drugs, including prescription opioids, and 20% test positive for 2 or more drugs.") (footnote omitted).
 29. See JONATHAN P. CAULKINS ET AL., RAND CORP., CONSIDERING MARIJUANA LEGALIZATION: INSIGHTS FOR VERMONT AND OTHER JURISDICTIONS 44 (2015) ("The descriptive statistics concerning overlap in use are clear. Marijuana users are much more likely than are nonusers to drink and to abuse alcohol. For example, current marijuana users are five times as likely as nonusers to meet DSM-IV criteria for alcohol abuse or dependence (26 percent versus 5 percent); that is, one in four current marijuana users is a problem drinker (calculated using 2012 NSDUH data using the SAMHSA online tool). Indeed, simultaneous use is common. The national household survey asks people what, if any, other substances they used the last time they drank alcohol. Among the 15.4 million people who used both alcohol and marijuana at some time in the past 30 days, 54 percent reported using marijuana along with alcohol the last time they drank, a proportion that rises to 83 percent among daily or near-daily marijuana users."); see also, e.g., GEORGE F. KOOB ET AL., DRUGS, ADDICTION, AND THE BRAIN 283-84 (2014); ROOM ET AL., *supra* note 26, at 17-19; Larkin, *supra* note 26, at 473-80 & nn. 87-109.
 30. See, e.g., BRITISH MED. ASS'N, *supra* note 25, at 73 (noting the "additive effect" when marijuana and alcohol are combined); MITCH EARLEYWINE, UNDERSTANDING MARIJUANA: A NEW LOOK AT THE SCIENTIFIC EVIDENCE 201-11 (2002) ("Driving after consuming alcohol, particularly in combination with cannabis, is extremely dangerous and ill-advised. Thus, users who wish to reduce the drug's harm should never operate a

- motor vehicle during intoxication.”); Eugene W. Schwilke et al., *Changing Patterns of Drug and Alcohol Use in Fatally Injured Drivers in Washington State*, 51 J. FORENSIC SCI. 1191, 1195 (2006) (“Combined marijuana and alcohol use are a concern in the driving population because of the marked synergism demonstrated between these two drugs, particularly in inexperienced users[.]” (citation omitted); see generally Larkin, *supra* note 26, at 478–79 & n.105 (collecting studies so concluding).
31. See, e.g., Stanford Chihuri et al., *Interaction of Marijuana and Alcohol on Fatal Motor Vehicle Crash Risk: A Case-Control Study*, 4 INJURY EPIDEMIOLOGY 8 (2017) (online); Guohua Li et al., *Role of Alcohol and Marijuana Use in the Initiation of Fatal Two-Vehicle Crashes*, 27 ANNALS OF EPIDEMIOLOGY 342 (2017). But cf. Julian Santaella-Tenorio et al., *US Traffic Fatalities, 1985–2014, and Their Relationship to Medical Marijuana Laws*, AM. J. PUB. HEALTH (Jan. 11, 2017) (finding a decrease in traffic fatalities in states with medical marijuana laws).
 32. See, e.g., ROBERT L. DUPONT, INST. FOR BEHAV. & HEALTH, IMPLEMENT EFFECTIVE MARIJUANA DUID LAWS TO IMPROVE HIGHWAY SAFETY (Oct. 12, 2016); Johannes E. Ramaekers, *Driving Under the Influence of Cannabis: An Increasing Public Health Concern*, J. AM. MED. ASS’N (Mar. 26, 2018), file:///C:/Users/Larkin/AppData/Local/Temp/jama_Ramaekers_2018_vp_180013.pdf.
 33. Tamara Johnson, Am. Auto. Ass’n NewsRoom, *Fatal Road Crashes Involving Marijuana Double After State Legalizes Drug* (May 10, 2016), <http://newsroom.aaa.com/2016/05/fatal-road-crashes-involving-marijuana-double-state-legalizes-drug>.
 34. As the report summarized: “The number of drivers in Colorado intoxicated with marijuana and involved in fatal traffic crashes increased 88% from 2013 to 2015 (Migoya, 2017). Marijuana-related traffic deaths increased 66% between the four-year averages before and after legalization (National Highway Traffic Safety Administration [NHTSA], 2017). Driving under the influence of drugs (DUIDs) has also risen in Colorado, with 76% of statewide DUIDs involving marijuana (Colorado State Patrol [CSP], 2017). Washington State experienced a doubling in drugged driving fatalities in the years following legalization (T. Johnson, 2016). In Oregon, 50% of all drivers assessed by drug recognition experts (DRE) in 2015 tested positive for THC (OLCC, 2015).” SMART APPROACHES TO MARIJUANA, LESSONS LEARNED FROM MARIJUANA LEGALIZATION IN FOUR U.S. STATES AND DC 7 (Mar. 2018).
 35. See *id.* at 35.
 36. *Id.*
 37. *Id.*
 38. *Id.*
 39. *Id.* (“While many factors contribute to pedestrian fatalities, it turns out that states that legalized marijuana for medical and/or recreational use saw a 16.4 percent surge in such deaths in the first six months of 2017 compared to the first six months of 2016, while non-legal states saw a drop of 5.8 percent in pedestrian fatalities over the same time (Boudette, 2018).”).
 40. See, e.g., NHTSA, DRUGGED DRIVING, *supra* note 15; D. Mark Anderson et al., *Medical Marijuana Laws, Traffic Fatalities, and Alcohol Consumption*, 56 J.L. & ECON. 333, 335, 345, 359–60 (2013); Michael N. Bates & Tony A. Blakeley, *Role of Cannabis in Motor Vehicle Crashes*, 21 EPIDEMIOLOGICAL REV. 222, 231 (1999) (finding insufficient proof that marijuana alone or in combination with alcohol increases the risk of traffic fatalities or injuries); Alfred Crancer, Jr. et al., *Comparison of the Effects of Marijuana and Alcohol on Simulated Driving Performance*, 164 SCIENCE 251, 254 (1969) (showing that marijuana users had more speeding errors but did not have a greater number of braking, signaling, steering, or total errors than control group); Scott V. Masten & Gloriam Vanine Guenzburger, *Changes in Driver Cannabinoid Prevalence in 12 U.S. States After Implementing Medical Marijuana Laws*, 50 J. SAFETY RES. 35, 45 (2014) (“Increased prevalence of cannabinoids among drivers involved in fatal crashes was only detected in a minority of the states that implemented medical marijuana laws. The observed increases were one-time changes in the prevalence levels, rather than upward trends, suggesting that these laws result in stable increases in driver marijuana prevalence. The reasons that changes in prevalence were detected in some states but not in others are unknown, but one factor may be differences between states in drug testing practices and regularity.”); Mark J. Neavyn et al., *Medical Marijuana and Driving: A Review*, 10 J. MED. TOXICOLOGY 269, 272–76 (2014); Ole J. Rasmussen et al., *Cannabis and Alcohol: Effects on Simulated Car Driving*, 179 SCIENCE 920, 923 (1973) (showing that marijuana use increased braking time but did not adversely affect other driving skills); R. Andrew Sewell et al., *The Effect of Cannabis Compared with Alcohol on Driving*, 18 AM. J. ON ADDICTIONS 185, 186, 188 (2009); see generally Larkin, *supra* note 26, at 474–76 & nn.92–97 (collecting studies).
 41. See BENJAMIN HANSEN ET AL., EARLY EVIDENCE ON RECREATIONAL MARIJUANA LEGALIZATION AND TRAFFIC FATALITIES, NBER WORKING PAPER 24417 (Mar. 2018), <http://www.nber.org/papers/w24417.pdf>.
 42. Nadia Solowij et al., *Therapeutic Effects of Prolonged Cannabidiol Treatment on Psychological Symptoms and Cognitive Function in Regular Cannabis Users: A Pragmatic Open-Label Clinical Trial*, 3 CANNABIS & CANNABINOID RES. 21 (2018).
 43. Mahmoud A. ElSohly et al., *Changes in Cannabis Potency Over the Last 2 Decades (1995–2014): Analysis of Current Data in the United States*, 79 BIO. PSYCHIATRY 613 (2016).
 44. See *Gregg v. Georgia*, 428 U.S. 153, 175 (1976) (lead opinion) (“In a democratic society, legislatures, not courts, are constituted to respond to the will and consequently the moral values of the people.”) (citation and internal punctuation omitted).
 45. See, e.g., Heidi King, Deputy Dir., Nat’l Highway Safety Admin., *DUID: A Vision for the Future* (Feb. 27, 2018), [https://www.nhtsa.gov/speeches-presentations/duid-vision-future;Planes,Trains,andAutomobiles:OperatingWhileStoned:HearingBeforetheSubcomm.onOperationsoftheH.Comm.onOversightandGovernmentReform,113thCong.\(2014\).](https://www.nhtsa.gov/speeches-presentations/duid-vision-future;Planes,Trains,andAutomobiles:OperatingWhileStoned:HearingBeforetheSubcomm.onOperationsoftheH.Comm.onOversightandGovernmentReform,113thCong.(2014).) Each of the expert witnesses who testified at the hearing acknowledged that drugged driving is an important public policy issue and poses a danger to road and highway safety. See *id.* at 9 (statement of Hon. Christopher Hart, Acting Chairman, National Transportation Safety Bd.); *id.* at 24–25 (statement of Jeffrey P. Michael, Assoc. Adm’r of Research &

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- Program Development, National Highway Traffic Safety Admin., U.S. Dep't of Transp.); *id.* at 42 (statement of Patrice M. Kelly, Acting Dir., Office of Drug & Alcohol Policy and Compliance, U.S. Dep't of Transp.); *id.* at 44 (statement of Ronald Flegel, Dir., Division of Workplace Programs, Center for Substance Abuse Prevention, Substance Abuse & Mental Health Services Admin., U.S. Dep't of Health & Human Servs.); see also NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 808 939, MARIJUANA, ALCOHOL AND ACTUAL DRIVING PERFORMANCE 4-15 (1999).
46. See, e.g., INST. OF MED., MARIJUANA AND MEDICINE: ASSESSING THE SCIENCE BASE 4 (Janet E. Joy et al. eds., 1999); NAT'L INST. ON DRUG ABUSE, U.S. DEP'T OF HEALTH & HUMAN SERVS., DRUGFACTS: DRUGGED DRIVING 2 (2013) ("Considerable evidence from both real and simulated driving studies indicates that marijuana can negatively affect a driver's attentiveness, perception of time and speed, and ability to draw on information obtained from past experiences."); WORLD HEALTH ORG., CANNABIS: A HEALTH PERSPECTIVE AND RESEARCH AGENDA 15-16 (1997); JONATHAN P. CAULKINS ET AL., MARIJUANA LEGALIZATION: WHAT EVERYONE NEEDS TO KNOW 33 (2d ed. 2016); ROOM ET AL., *supra* note 26, at 18-19 ("Better-controlled epidemiological studies have recently supplied credible evidence that cannabis users who drive while intoxicated are at increased risk of motor vehicle crashes.... A convergence of fallible evidence thus suggests that cannabis use increases the risk of motor vehicle crashes 2-3 times....").
 47. See EARLEYWINE, *supra* note 30, at 214 ("Obviously, no one should operate dangerous machinery of any kind under the influence of a mind-altering drug."); Paul Armentano, *Should Per Se Limits Be Imposed for Cannabis? Equating Cannabinoid Drug Concentrations with Actual Driver Impairment: Practical Limitations and Concerns*, 35 HUMBOLDT J. SOC. RELATIONS 35 (2013) (criticizing zero tolerance and per se rules for measuring driving under the influence of marijuana but assuming that no one should drive while impaired by it).
 48. The Commerce Clause states that Congress has the authority "[t]o regulate Commerce with foreign Nations, and among the States, and with the Indian Tribes." U.S. CONST. art. I, § 8, cl. 3.
 49. Congress may prevent interstate commerce from being used to circulate items deemed dangerous or immoral. See, e.g., *United States v. Lopez*, 514 U.S. 549, 558 (1995) ("Congress may regulate the use of the channels of interstate commerce" and also "is empowered to regulate and protect the instrumentalities of interstate commerce, or persons or things in interstate commerce, even though the threat may come only from intrastate activities[.]").
 50. See 23 U.S.C. § 158 (2012).
 51. See U.S. CONST. amend. XXI, § 2 ("The transportation or importation into any State, Territory, or possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited.").
 52. See U.S. CONST. amend. X ("The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.").
 53. 483 U.S. 203 (1987).
 54. *Id.* at 208-12.
 55. There is a difference between buccal swab testing conducted at a roadside stop and blood testing conducted after someone has been taken into custody. Reliable roadside testing can allow a police officer to obtain evidence supporting or inconsistent with the presence of an impairing substance in the driver's system. Later blood or urine testing can provide valuable confirmation for judicial or administrative proceedings.
 56. For examples of other proposals, see GOVERNORS HIGHWAY SAFETY ASS'N, *supra* note 15; OFFICE OF NAT'L DRUG CONTROL POLICY, NATIONAL DRUG CONTROL STRATEGY 2010, at 24 (July 2010); Larkin, *supra* note 26, at 483-508.
 57. See, e.g., Larkin, *supra* note 26, at 483-515.
 58. See <https://www.youtube.com/watch?v=hUVwR0rw5fk>.
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Driving Under the Influence of Drugs:

A Checklist for Policymakers



CALL
TO
ACTION

Driving under the influence of drugs (DUID) impairs driver performance and is a significant public safety threat. We urge policymakers to develop and pass practical DUID legislation.



The Problem *As drunk driving has declined, drugged driving is increasing.*

- In 2005, **28%** of fatally-injured drivers with known test results were positive for the presence of drugs; by 2009, that number rose to **33%** (NHTSA, 2010).
- In 2015, **43%** of fatally-injured drivers with known test results were found to be positive for drugs (FARS, 2016).
- The 2013-2014 National Highway Traffic Safety Administration's (NHTSA) National Roadside Survey (NRS) found that **22.5%** of night-time drivers tested positive for illegal, prescription, or over-the-counter medications while **1.5%** of night-time drivers had a .08 BAC or higher.

The Solution *Identify issues specific to your state and strengthen laws.*

1. **Review your state's DUID fatality, crash, and arrest data (contact your highway safety office and state police agency).**
 - What is the magnitude of the problem?
 - Which drugs are most commonly found in drivers' systems?
 - Are certain segments of the population high-risk?
 - Are there gaps in the data that need to be filled?
2. **Identify legislative gaps in existing impaired driving laws.**
 - How is drug-impaired driving defined?
 - Do implied consent statutes facilitate drug testing?
 - Does existing law apply equally to alcohol-impaired driving and drug-impaired driving?
3. **Collaborate with stakeholders.**
 - Identify challenges to DUID enforcement, prosecution, sentencing, and treatment.
 - Identify legislative changes to assist practitioners in addressing DUID.
 - Ask practitioners how to increase system efficiency and improve outcomes.



RESPONSIBILITY.ORG



POLICY OPTIONS

Establish a state task force to address DUID.



Include every facet of the DUI system, including advocacy groups and other interested parties, to create a strategic plan to prevent and reduce DUID.

Provide more tools to law enforcement.



- Provide funding to train officers (DRE/ARIDE).
- Launch an oral fluid pilot program to identify DUID drivers effectively and efficiently.

Establish enhanced penalties for polysubstance-impaired driving.



Drugs used in combination or with alcohol cause greater impairment and heighten crash risk. This justifies tougher sanctions similar to those in place with drivers who have high blood alcohol concentrations (BACs of .15 >).

Create parity in sanctions between DUI and DUID where appropriate.



Many states have unequal penalties for DUI and DUID.

Mandate screening and assessment.



All impaired drivers need substance use and mental health disorder screening/assessment to identify underlying causes of offending and to reduce recidivism.

Establish a zero tolerance law for all drugs, including marijuana, for drivers under the age of 21.



Impairment plus inexperience increases youth crash risk relative to other age groups. This law establishes parity with existing zero tolerance laws for alcohol for drivers under the age of 21.

Require treatment if indicated by an assessment.



Tie treatment completion to re-licensing as a condition of probation.

Increase the number of DUI or hybrid DUI/Drug Courts.



Increase the number of DUI or hybrid DUI/Drug Courts in your state to deal with the highest-risk offenders (e.g., repeat offenders). These programs are highly effective in reducing recidivism and saving costs.

Improve your state's DUID data collection.



- Mandate alcohol and drug testing of all fatally-injured drivers.
- Encourage alcohol and drugs testing for surviving drivers in fatal and serious-injury crashes.

Separate DUI and DUID statutes.



It is important to accurately quantify alcohol, drug, and polysubstance-impaired driving and not report all three as a single behavior.

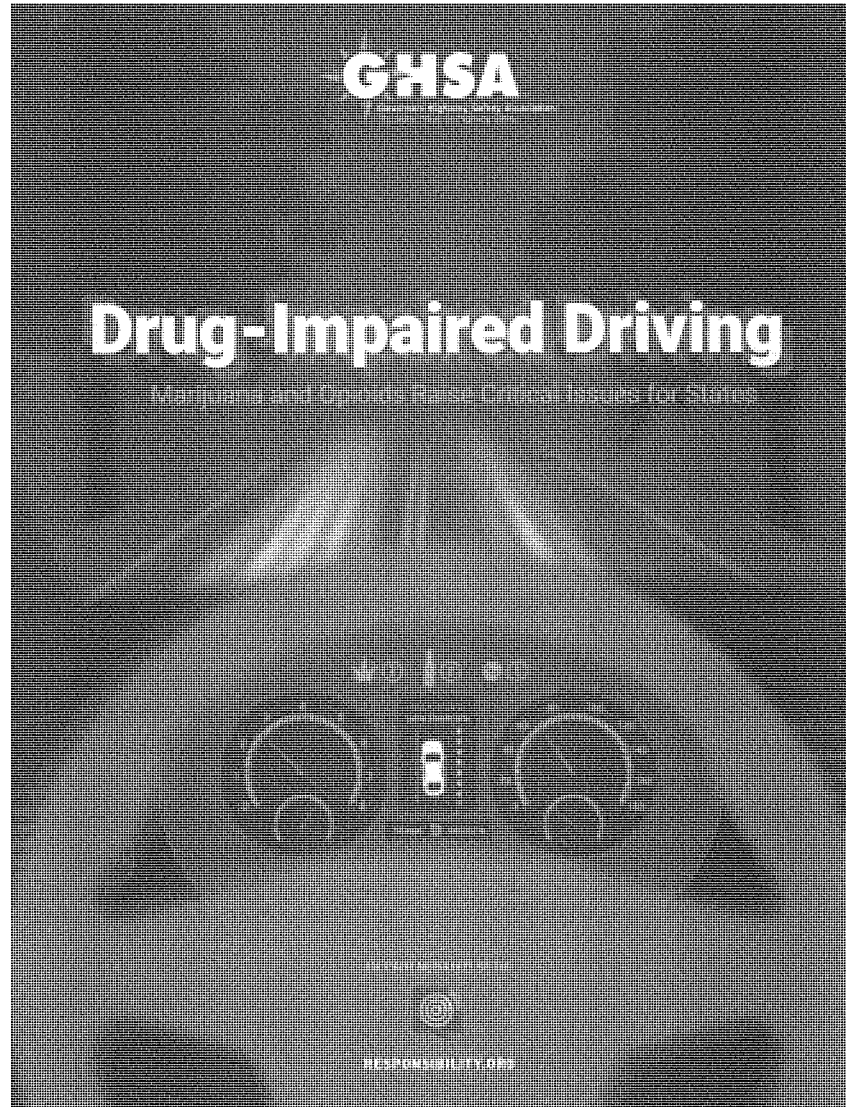
Ensure that the language in your DUID statute is broad enough.



Ensure that the language in your DUID statute is broad enough to include inhalants and emerging synthetic/designer drugs.

Additional Sources

For more information about DUID, refer to *Drug-Impaired Driving: A Guide for What States Can Do*, produced by the Governors Highway Safety Association (GHSA) with funding from Responsibility.org. It summarizes the state of knowledge on DUID and identifies state actions to address the problem.



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Executive summary

Drug use and abuse are critical social issues in the United States. In 2018, two drug families in particular stand out: marijuana (cannabis) and opioids.

Marijuana and opioid use affect drivers and can make driving tasks more difficult. Marijuana use is associated with impaired driving performance, and opioid use is associated with impaired driving performance. Both drugs can also be used in combination with alcohol, which can further impair driving performance.

Research conducted by the National Highway Traffic Safety Administration (NHTSA) and the Department of Transportation (DOT) has shown that marijuana and opioid use can impair driving performance and increase the risk of crashes.

This report provides information on the effects of marijuana and opioid use on driving performance and the risk of crashes.

It also provides information on the effects of marijuana and opioid use on driving performance and the risk of crashes.

Consider the following when driving and when using marijuana or opioids:

Do not drink alcohol while driving or when using marijuana or opioids.

Do not use marijuana or opioids while driving.

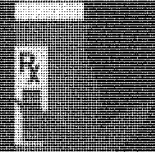
Change the time of day when you use marijuana or opioids to avoid driving while using them.

Use an alternate mode of transportation (e.g., taxi, bus, train) to avoid driving while using marijuana or opioids.

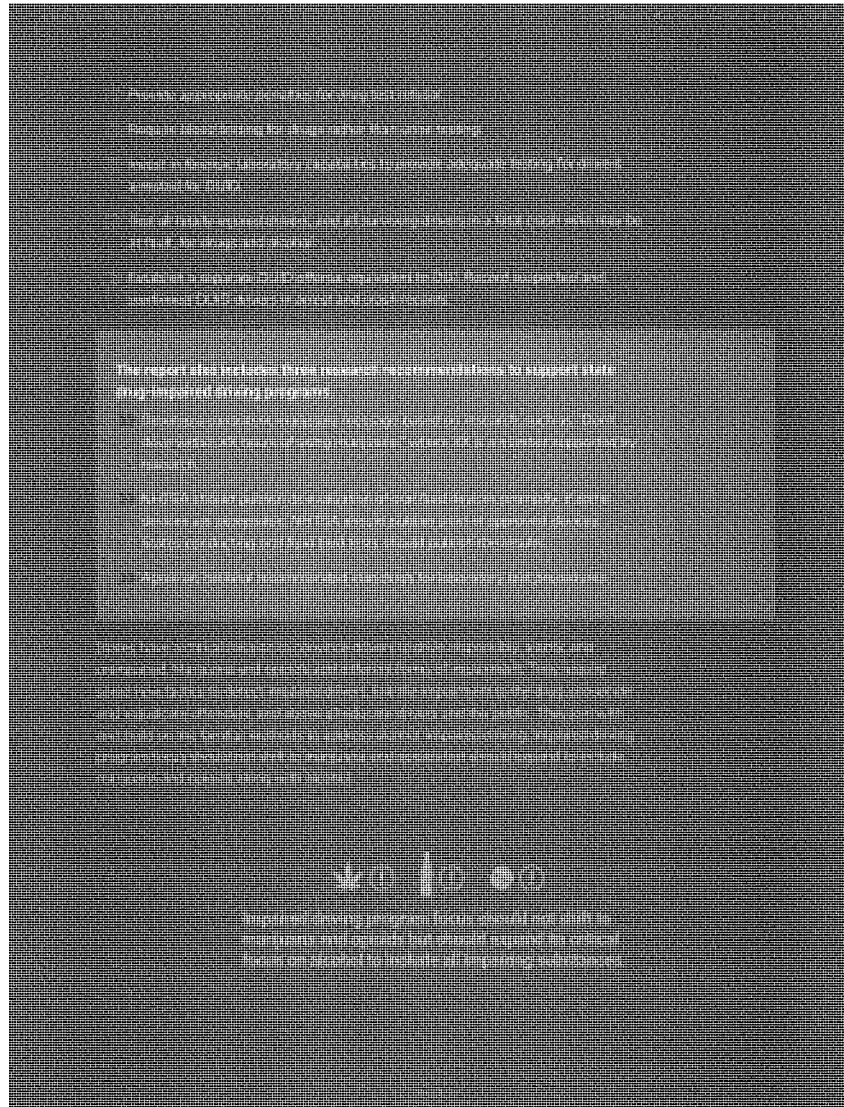
Do not use marijuana or opioids while driving or when using them.

Do not use marijuana or opioids while driving or when using them.

Do not use marijuana or opioids while driving or when using them.



Marijuana and opioid use affect driving and can cause crashes.



About this report

Drug use and abuse are critical social issues in the United States in 2018. Two drug families in particular stand out: marijuana (cannabinoids) and opioids. Marijuana use is rapidly becoming normalized, with recreational marijuana legal in 9 states and the District of Columbia and medical marijuana approved in 29 states and the District of Columbia (NCSL, 2018a; 2018b). Opioid addiction and opioid overdose deaths have become a national crisis, with overdoses producing an estimated 115 deaths daily (NIDA, 2018).

Marijuana and opioid use affect driving and can cause crashes. State Highway Safety Offices (SHSOs) are concerned: in a survey, virtually all said drugged driving is a problem and the majority rated it equal to or more important than driving while impaired by alcohol (GHSA, 2018a). The National Highway Traffic Safety Administration (NHTSA) held a Drugged Driving Call to Action Summit on March 15, 2018, a public meeting with key stakeholders to kick off NHTSA's "new initiative to lead national dialogue and begin setting a course of action to combat this growing problem." States must find effective strategies to address impaired driving resulting from use of marijuana and opioids.

This report should help states and other stakeholders understand the key facts. It incorporates information from a February 2018 survey of SHSOs on their challenges and strategies for dealing with marijuana- and opioid-impaired driving (GHSA, 2018a). For information on driving under the influence of drugs (DUID) in general see the 2017 report *Drug-Impaired Driving: A Guide for States, 2017 Update* (GHSA, 2017).

This report begins by describing the size of the DUID problem, using the best available data but pointing out the substantial limitations in these data. The next two sections discuss marijuana and opioids, respectively: how frequently each is used and what is known about how each affects driving ability and crash risk. These sections document current state laws, active legislation, and public knowledge and attitudes regarding marijuana and opioids.

The next section documents current state DUID detection, arrest, and prosecution strategies that apply to marijuana or opioids. It discusses legal and policy issues that may hinder these strategies.

Finally, the report provides recommendations for what states can and should do to address marijuana- and opioid-impaired driving within their impaired driving programs. Marijuana and opioids require some new tactics to detect impairment at the roadside, provide chemical evidence of impairment, convince judges and juries of their impairing effects, and above all educate drivers and the public about the



115
The number
of deaths
that opioid
addiction
and opioid
overdose
cause daily
in the U.S.

dangers of driving while impaired. The impaired driving message changes only by adding marijuana, opioids, and other drugs to alcohol. Don't drive if you are impaired by alcohol or drugs because you will put yourself and others at risk. But if you do, you may be detected, arrested, and sanctioned.

The report contains information available as of April 1, 2018. The references provide greater detail.

Size of the problem

How frequently drugs are detected in drivers

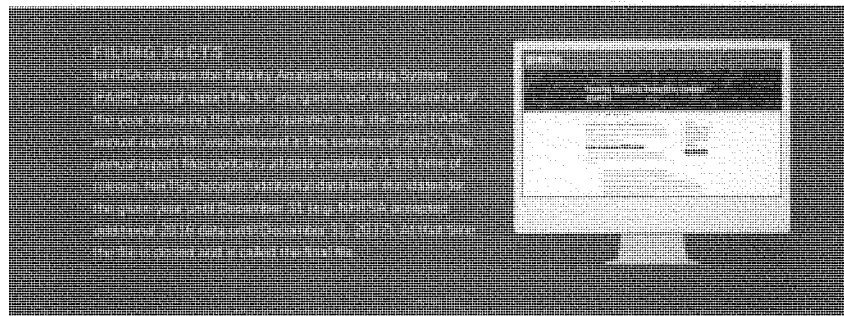
No data sources accurately document how frequently drivers have a measurable amount of some drug in their systems, much less how frequently they are impaired by drugs. These sections report data from two sources: NHTSA's Fatality Analysis Reporting System (FARS) and roadside surveys in the United States and Canada.

FARS data

FARS is the best data source that includes information from all states. Within FARS, the most accurate and complete data are for fatally-injured drivers because they are tested for drugs more frequently than surviving drivers. However, as documented by Berning and Smither (2014):

- » Testing rates vary considerably by state, from very low (2%) to very high (96%). States test for different drugs, using different testing protocols and different cutoff values. This means that FARS data cannot be used to compare states.
- » Testing protocols and cutoff values can change over time. This means that conclusions regarding change over time must be considered carefully.

No data sources accurately document how frequently drivers have a measurable amount of some drug in their systems.



This section summarizes FARS data on drug presence in fatally-injured drivers and draws conclusions that respect the FARS data limitations. Data for 2016 are from the FARS annual report file, 2006 data are from the final FARS file, and 2015 data are from both files. Drug and alcohol presence is slightly higher in each year's final file because some test results are not available when the annual report file is produced.

Drug and alcohol presence, 2016 and 2015, fatally-injured drivers:

- » **Drugs in drivers:** In 2016, 43.6% of the drivers with known drug test results were drug-positive. In 2015, of the drivers with known test results, 43.0% in the annual report file and 43.4% in the final file were drug-positive.
- » **Alcohol in drivers:** Of the drivers with known alcohol test results, 37.9% were alcohol-positive (any alcohol at all) in 2016 compared to 38.0% in the 2015 annual report file and 38.1% in the final file.
- » **Poly-drug and drug-alcohol:** In 2016, 50.5% of the drug-positive drivers were positive for two or more drugs and 40.7% were positive for alcohol.

Ten-year changes, 2006 to 2016, fatally-injured drivers

- » **Drugs:** In 2006, 27.8% of drivers with known drug test results were drug-positive compared to 43.6% in 2016. The number of known drug-positive drivers increased from 3,994 in 2006 to 5,365 in 2016.
- » **Alcohol:** In 2006, 41.0% of all drivers with known test results were alcohol-positive compared to 37.9% in 2016. The number of known alcohol-positive drivers decreased from 7,750 in 2006 to 5,473 in 2016.
- » **Final file:** Both the percentage and number of drug-positive and alcohol-positive drivers will increase slightly in the 2016 final file.

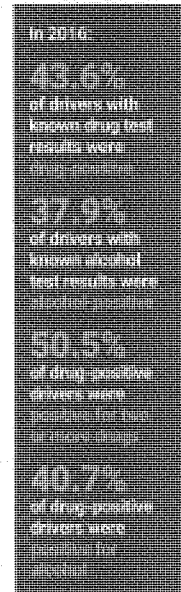
On the following page, Figure 1 shows alcohol and drug presence in fatally-injured drivers with known test results in 2015 and 2016. Figure 2 shows how alcohol and drug presence in fatally-injured drivers with known test results has changed from 2006 to 2016.

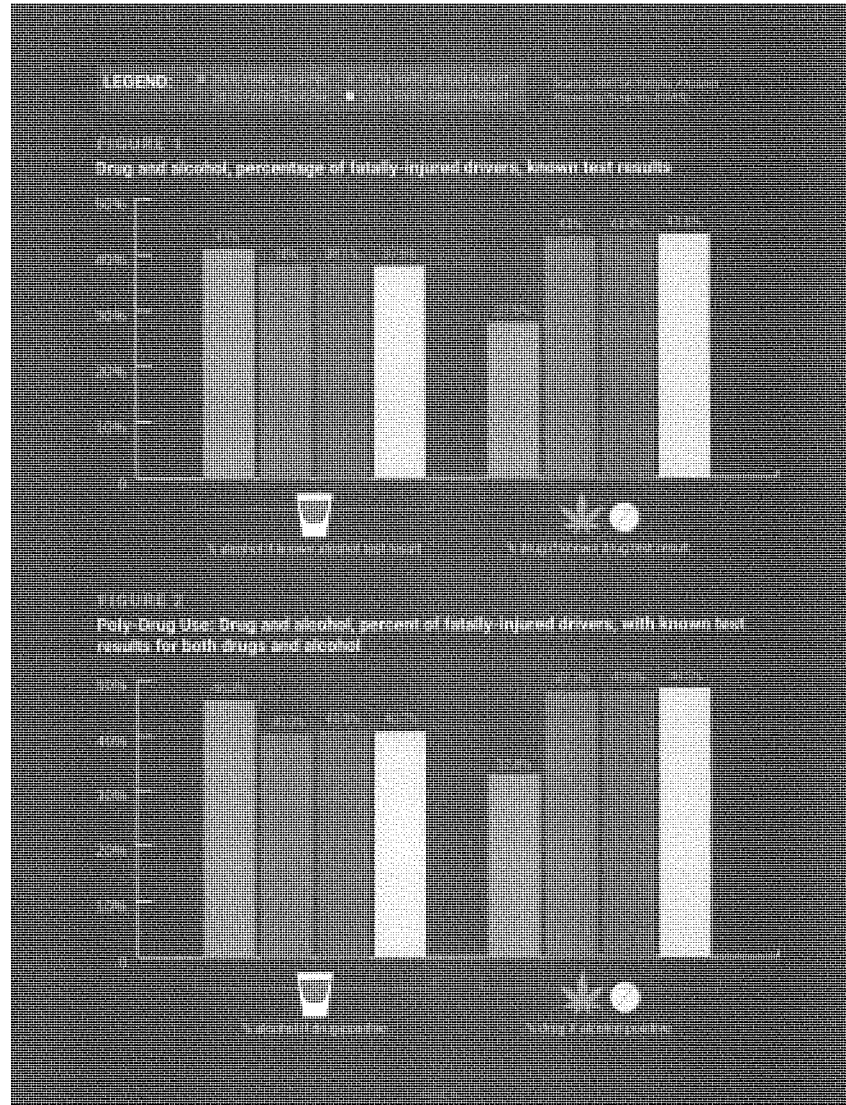
Supporting information

- » **Drug testing rate:** the proportion of fatally-injured drivers known to have been tested for drugs is similar in 2016, 2015, and 2006.

2016 annual report file:	2015 annual report file:	2015 final file:	2006 final file:
54.3%	57.1%	64.2%	59.3%

- » **High testing rate states:** in the 19 states that tested over 75% of all fatally-injured drivers in 2016, drug presence was very similar to that for all states combined.





» **Drug presence does not imply impairment:** there is no established relation between drug presence, as measured by a drug test, and impairment, for any drug. In particular, some drugs reported in drug tests are non-impairing metabolites.

The limitations of the FARS data mean that precise quantitative conclusions cannot be made about the level of drug presence or the amount that drug presence has changed over time. However, the following qualitative conclusions regarding fatally-injured drivers are fully supported:

- » Drug presence probably increased slightly from 2015 to 2016.
- » Alcohol presence was about the same in 2016 as in 2015.
- » More drivers were drug-positive than alcohol-positive both in 2016 and 2015.
- » Many drivers combine more than one drug or combine drugs and alcohol.
- » Drug presence increased substantially from 2006 to 2016.
- » Alcohol presence decreased somewhat from 2006 to 2016.

Washington State FARS data

Washington State recently analyzed drug and alcohol use among drivers involved in fatal crashes in their 2016 FARS data (Grondel et al., 2016). There were more than twice as many poly-drug drivers—with two or more drugs, or alcohol and at least one drug—than alcohol-only drivers and five times more than THC-only drivers.

Roadside survey data

In 2013–14, NHTSA conducted a roadside survey of drivers during weekday days and weekend nights (Berning et al., 2015). In each time period, 22% of the drivers tested positive for some drug or medication (Kelly-Baker et al., 2017). Alcohol presence was considerably lower: 8.3% of the weekend night drivers had a positive breath alcohol concentration (BrAC) level (.005 BrAC or above) with 1.5% at a BrAC of 0.08 or above. On weekday days, only 1.1% had a positive BrAC and 0.4% a BrAC of 0.08 or above.

Alcohol concentration is measured either in blood (BAC) or breath (BrAC). Both use the same units and are equivalent for all practical purposes.

ALCOHOL PREVALENCE

Data Collection Time Period	% Alcohol Positive (%BrAC > .005)	% BrAC > .08
Weekday Daytime	1.1%	0.4%
Weekend Nighttime	8.3%	1.5%

Source: Adapted from Berning, et al., 2015

OVERALL DRUG PREVALENCE

Time of Day	% Drug-Positive Oral Fluid Test	% Drug-Positive Blood Test	% Drug-Positive Oral Fluid and/or Blood Test
Weekday Daytime	19.0%	21.6%	22.4%
Weekend Nighttime	19.8%	21.2%	22.5%

Source: Adapted from Berning, et al., 2015

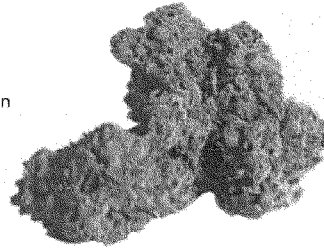
NHTSA conducted a similar roadside survey in 2007. The two surveys differed slightly in the specific drugs tested and cutoff levels used. When adjusted to the same drugs and cutoffs, the proportion of drivers testing positive for any illegal drug (including marijuana) rose from 12.4% in 2007 to 15.1% in 2013-14 and the proportion testing positive for a medication rose from 3.9% to 4.9%.

Roadside survey data are limited because they come from a sample of drivers in 60 locations. Driver participation was voluntary; 71% of the eligible drivers provided a blood or oral fluid sample. Nevertheless, the roadside survey data support the conclusions from FARS that drug presence in drivers has increased in the past decade.

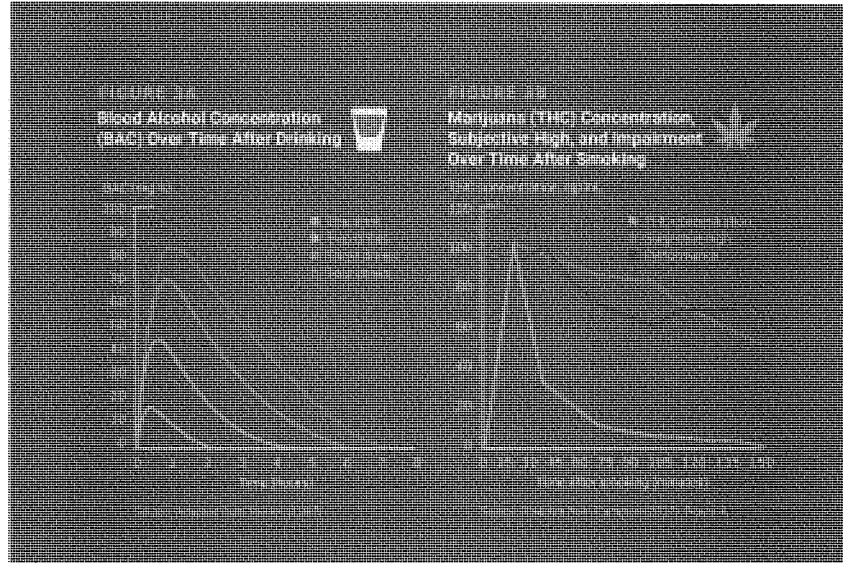
A 2012 Canadian roadside survey reported lower levels: 7.4% were positive for any drug and 6.5% had a positive BAC (Beirness, 2014).

Marijuana

Marijuana use is increasing in the general population and among drivers. Marijuana is no longer just smoked, it's vaped, eaten, drunk, dabbed, chewed, or wiped, often in much higher concentrations than traditional smoked joints. Marijuana affects driving-related skills but its effect on crash risk is uncertain. There's no public consensus on whether marijuana increases crash risk or whether it's acceptable to drive after using marijuana. State laws regarding marijuana possession and use range from prohibition to varying degrees of legalization. This section documents these issues.



It's important to understand the many ways in which marijuana differs from alcohol. Alcohol in the body can be measured in breath, blood, or urine. Blood alcohol concentration (BAC) reaches a peak about 20 minutes to an hour after drinking and drops steadily and gradually thereafter (Figure 3A). BAC is closely related to impairment of behavior (balance, coordination, reaction time), attention, decision-making, risk taking, and judgment. Many studies have documented how a driver's crash risk increases as



BAC increases. They form the basis for laws in each state prohibiting driving with a BAC exceeding 0.08 g/dL (0.05 in Utah).

Marijuana differs substantially. At present, marijuana cannot be measured accurately in breath but must be measured in blood, urine, or saliva. The blood concentration of its active component, delta 9-tetrahydrocannabinol (THC), rises very quickly after consumption but then drops rapidly (Figure 3B). Impairment rises rapidly and remains for some time. As a result, THC measured in blood or urine is not closely related to impairment. To add to the confusion, non-impairing marijuana metabolites can remain in the body for weeks. Finally, marijuana's impairing effects vary substantially across individuals. Compton (2017) provides a detailed discussion of these differences.

About marijuana

Marijuana, or cannabis, is a psychoactive drug from the cannabis plant. Marijuana can be smoked, inhaled as a vapor, added to food, or applied directly to the skin. Signs of marijuana use may include bloodshot eyes, increased heart rate, sleepiness, poor coordination, delayed reaction time, and increased appetite (American Addiction Centers, 2018; Narconon, 2018).

Marijuana use varies widely by state, correlated strongly with state laws, as shown in Table 1.

There's no public consensus on whether marijuana increases crash risk or whether it's acceptable to drive after using marijuana.

TABLE 1. MARIJUANA USE IN THE PAST MONTH BY AGE AND STATE MARIJUANA LAW.

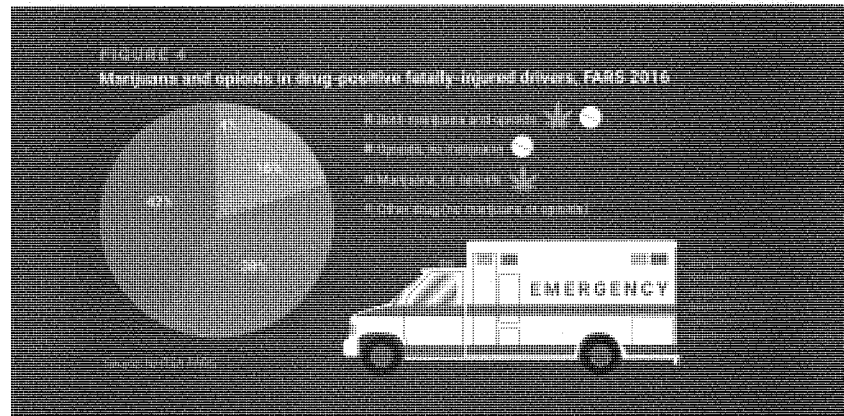
Age	STATE MARIJUANA LAW		
	All use illegal	Medical use only	Recreational use
12-17	6.2 %	8.6 %	10.1 %
18-25	16.8 %	23.1 %	26.2 %
26 and above	5.1 %	8.0 %	12.0 %

In the United States in 2016, 6.5% (1.6 million) of adolescents age 12 to 17, 20.8% (7.2 million) of young adults age 18 to 25, and 7.2% (15.2 million) of adults age 26 and above reported using marijuana in the past month (NSDUH, 2016). Together there were 24.0 million users, or about 8.9% of the population age 12 and above. In Canada in 2012, 12% of persons aged 15 and above reported using marijuana in the past year (Capler et al., 2017).

Marijuana use may increase when a state authorizes recreational use. In Colorado, in the three years (2013–2015) after the state legalized recreational marijuana compared to the three prior years (2010–2012), use by youth (age 12–17) increased by 12 percent to 11.8%; use by young adults (age 18–25) increased by 16 percent to 31.5%; and use by adults aged 26 and above increased by 71 percent to 13.6% (RHMIDTA, 2017).

Marijuana use by drivers

Fatally-injured drivers, reported in FARS: In 2016, 41.1% of the drug-positive fatally-injured drivers were positive for some form of marijuana. About three-quarters of these drivers were positive for active marijuana, coded as Delta 9 or THC. In 2006, the marijuana-positive proportion was 34.5%.



In 2016, 54.3% of the fatally-injured drivers were tested. This means that 22.3%—almost one-quarter—of all fatally-injured drivers were known to have been marijuana-positive.

While the limitations of FARS data discussed above apply, the general conclusions are clear: marijuana is the most common drug found in fatally-injured drivers and marijuana presence has increased substantially in the past decade.

Canadian national fatality data: Canadian data show lower levels of marijuana but similar trends. Among those drivers tested for drugs, 12.4% of fatally-injured drivers were positive for marijuana in 2000. This percentage gradually rose to 21.9% in 2013 before declining to 18.6% in 2014 (TIRF, 2017).

Roadside survey data: In NHTSA's 2013-14 roadside survey, marijuana was by far the most prevalent drug, with 12.7% of drivers testing positive on weekend nights and 8.7% on weekday days. Nighttime presence in the 2007 survey was 8.7% (Kelly-Baker et al., 2017).

In the 2012 Canadian roadside survey, 3.3% were positive for marijuana. As in the United States, marijuana was by far the most common drug detected (Beirness, 2014).

Survey data: In a national survey in 2017, 4.7% of drivers reported having driven within one hour of using marijuana in the past year (AAAFTS, 2018).

In a Canadian national survey in 2012, approximately 2.4% of drivers reported driving at least once within two hours of using marijuana (Capler et al., 2017).

Drivers in Colorado and Washington: Colorado and Washington were the first two states to authorize recreational marijuana use. In roadside surveys in Washington conducted immediately before and 6 and 12 months after legal sales began in July 2014, the proportion of THC-positive drivers increased from 14.6% to 19.4% and then to 21.4%, though the increases were not statistically significant (NHTSA, 2016). The increase was concentrated in the daytime: from 8% THC-positive before sales began to 23% afterwards, compared to nighttime proportions of 19% before and 20% afterwards (Eichelberger, 2018). In Colorado, the number of traffic fatalities in which a driver tested positive for THC increased from 18 in 2013 to 77 in 2016 (CDOT, 2018).

In a September 2014 survey of drivers in Colorado and Washington who reported any marijuana use in the past month, 43.6% reported driving under the influence of marijuana in the past year and 23.9% had driven within one hour of using marijuana at least five times in the past month (Davis et al., 2016).

Marijuana impairment and crash risk

Many experimental studies document that marijuana affects psychomotor skills and cognitive functions critical to driving including vigilance, drowsiness, time and distance perception, reaction time, divided attention, lane tracking, coordination, and balance (Capler et al., 2017; Compton, 2017; Strand et al., 2016). Marijuana effects

Marijuana is the most common drug found in fatally-injured drivers and marijuana presence has increased substantially in the past decade.

vary substantially across individuals. For example, chronic marijuana users may not be impaired even with high levels of marijuana in their bodies (NHTSA et al., 2017).

Marijuana's effect on crash risk is far less clear. While there are many recent studies, methodological flaws are common. The studies are complicated by the difficulty in estimating a driver's THC at the time of a crash, by the lack of a relationship between THC level and impairment, and by tests that do not distinguish between THC and non-impairing metabolites. The most supportable conclusions are that marijuana has caused or contributed to some crashes; that it can, but need not necessarily, increase crash risk in a driver; and that the best overall estimate of marijuana's effect on crash risk in general is an increase of 25-35%, or a factor of 1.25 to 1.35.

The best overall estimate of marijuana's effect on crash risk in general is an increase of 25-35%, or a factor of 1.25 to 1.35.

These conclusions are based on several recent summaries and reviews of marijuana crash risk studies. The summaries and reviews provide references to many individual studies.

- » Compton (2017) summarizes recent epidemiological studies, frequently-cited meta-analyses, the extensive DRUID study (Schulze et al., 2012), and the NHTSA crash risk study (Compton and Berning, 2015). The NHTSA study, perhaps the most methodologically sound of all marijuana crash risk studies, found an increase of 25%, most of which was due to associated driver factors such as age and gender.
- » Gjerde et al. (2015) summarize 36 epidemiological studies, 23 of which found a statistically significant effect of marijuana on crashes and injuries with effect sizes ranging up to 400%.
- » Rogeberg and Elvik (2016a) replicate two previous meta-analyses and conduct a new one of 21 studies. They conclude that marijuana increases crash risk by 22-36%. See also Gjerde and Mørland (2016) for comments and Rogeberg and Elvik (2016b) for a response.
- » White (2017) reviews 11 epidemiological studies. He concludes that cannabis does not increase crash risk by more than 30%.
- » Capler et al. (2017) review and comment on all previous reviews and studies and conclude that marijuana increases crash risk by about 20-30%.
- » Romano, Torres-Saavedra et al. (2017) examine in detail the issues of attempting to estimate marijuana crash risk using FARS data. They conclude that FARS data cannot be used for precise risk estimates. They concur with the many studies in the studies and reviews cited above that the crash risk of marijuana is less than that of alcohol.

Two studies of the overall effects of marijuana legalization arrive at different conclusions. Colorado and Washington legalized recreational marijuana in 2012. Aydelotte et al. (2017) examined overall traffic fatality rates per travel mile in Colorado, Washington, and eight control states between 2009 and 2015. After controlling for overall trends and state-specific characteristics they concluded that fatality rate changes in Colorado and Washington were similar to changes in the control states. A Highway Loss Data Institute (HLDI) study found that collision claim frequencies increased by about 3% after recreational marijuana use was legalized in Colorado, Oregon, and Washington compared to neighboring control states (IIHS, 2017).

Driver views on marijuana and driving

In a 2017 national survey, 89.1% of drivers said that they feel it is unacceptable to drive after using marijuana (AAAFTS, 2018).

In contrast, in surveys and focus groups in Colorado and Washington, almost all regular marijuana users believed that marijuana doesn't impair their driving and some believed that marijuana improves their driving (CDOT, 2014; PIRE, 2014; Hartman and Huestis, 2013). Most of these regular marijuana users drove "high" on a regular basis. They believed it is safer to drive after using marijuana than after drinking alcohol. They believed that they have developed a tolerance for marijuana's effects and can compensate for any effects, for instance by driving more slowly or by allowing greater headways. However, Ramaekers et al. (2016) found that marijuana's effects on cognitive performance were similar for both frequent and infrequent marijuana users.

In a survey of regular marijuana and hashish users in Colorado and Washington, Allen et al. (2016) asked respondents if they were high or feeling the effects of marijuana or hashish when they took the survey. Those who reported being high were more likely to believe they could drive safely under the influence of either marijuana or alcohol. In another survey, drivers who reported using marijuana, and those who reported driving within an hour of use in the past year, were less likely to believe that using marijuana increases crash risk and more likely to believe that it does not affect or decreases crash risk (Arnold and Tefft, 2016). In a final survey, drivers who reported using marijuana were more supportive of and had a greater intention to drive after using marijuana (Ward et al., 2016).

In a nationwide survey of 2,800 high school students and their parents conducted by Liberty Mutual and Students Against Destructive Decisions (SADD), 33% of the students and 27% of their parents believed that it is legal to drive under the influence of marijuana in states where it's been legalized for recreational use. Additionally, 88% of the students and 93% of the parents said that driving under the influence of alcohol is dangerous, while only 68% of students and 76% of parents said the same for marijuana. Finally, 22% of teens admitted that driving under the influence of marijuana is common among their friends (Liberty Mutual, 2017).

State marijuana laws

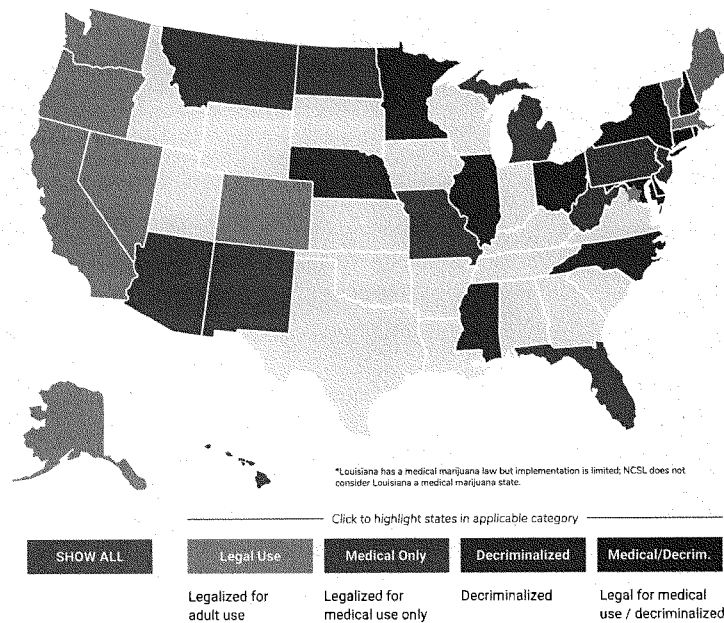
Recreational or medical marijuana is legal in more than half the states, with more states likely to liberalize marijuana laws in 2018. As of April 2018, medical marijuana use was

Some regular marijuana users incorrectly believe that marijuana improves their driving.

allowed in 29 states and the District of Columbia. An additional 17 states allowed the use of “low THC, high cannabidiol (CBD)” products for medical reasons (NCSL, 2018a). Recreational use was allowed in nine states and the District of Columbia. Most recently, Vermont’s legislature authorized recreational use effective July 1, 2018. Canada also authorized recreational use effective July 1, 2018. Marijuana possession and use was decriminalized in 22 states (NCSL, 2018b). Figure 1 shows state marijuana possession and use laws as of April 2018.

As of April 30, 2018, recreational marijuana bills had been introduced in 20 states (in addition to Vermont), medical bills in 14 states, and decriminalization bills in 12 states (Marijuana Policy Project, 2018). In contrast, the US Drug Enforcement Agency classifies marijuana, along with heroin, LSD, and other drugs, as a Schedule 1 drug which has “no currently accepted medical use and a high potential for abuse” (USDEA, 2018).

FIGURE 5
State marijuana possession and use laws



Source: Adapted from NCSL, 2018a.

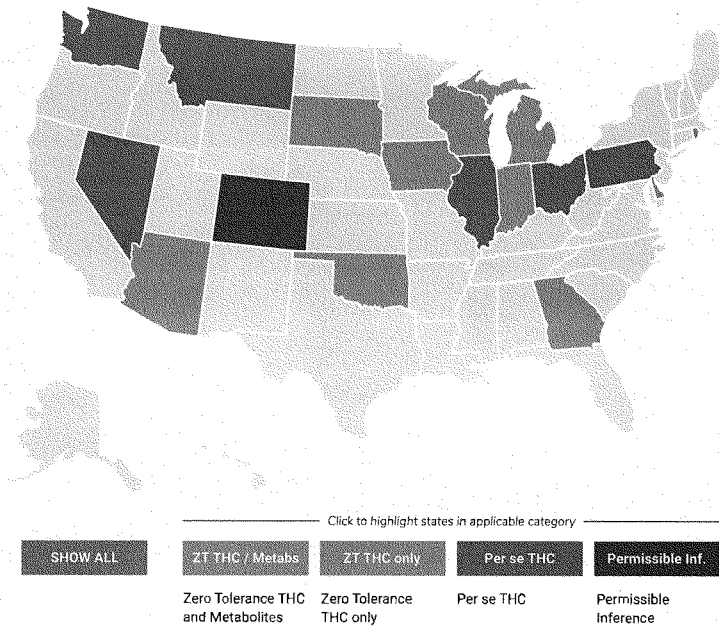
Three types of state laws apply to driving under the influence of marijuana.

Driving Under the Influence of Drugs (DUID) is illegal in every state.	Zero Tolerance laws prohibit driving with any amount of specified drugs in the body.	Per se laws prohibit driving with an amount of a drug above a specified per se limit, similar to the 0.08 or 0.05 BAC per se laws for alcohol.
DUID has two requirements: an officer must observe signs that the driver is impaired and the impairment must be linked to a drug. Marijuana can impair, so DUID laws apply to marijuana.	As of April 2018, 12 states have zero tolerance laws for marijuana: 9 states for THC or a metabolite and 3 states for THC but with no restriction on metabolites (GHSA, 2018b; NCSL, 2018c). South Dakota's zero tolerance law applies only to drivers under the age of 21.	As of April 2018, 7 states have marijuana per se laws with THC limits of 1 ng (Pennsylvania), 2 ng (Nevada and Ohio), 3 ng (West Virginia, for state-registered medical marijuana patients), and 5 ng (Illinois, Montana, and Washington). Colorado has a "permissible inference" law with a 5 ng limit. (ibid.)

Figure 2 shows state marijuana impaired driving laws as of April 2018.

FIGURE 6

State marijuana impaired driving laws—DUID



Source: Adapted from NCSL, 2018b.

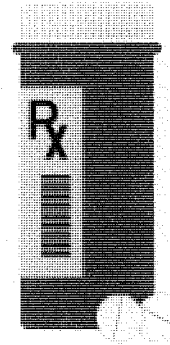
Opioids

On October 26, 2017, Acting Health and Human Services Secretary Hargan declared a nationwide public health emergency regarding the opioid crisis. While overdose deaths from the abuse of prescription or illegal opioids have received the most attention, opioids also affect driving and can cause crashes. This section documents the role of opioids in driving.

About opioids

Opioids are a class of drugs that includes heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription including oxycodone (OxyContin), hydrocodone (Vicodin), codeine, morphine, and many others. Opioid pain relievers are generally safe when taken for a short time and as prescribed by a doctor, but because they produce euphoria in addition to pain relief, they can become addictive. Regular use, even as prescribed by a doctor, can lead to dependence (NIDA, 2018). Synthetic opioids such as fentanyl or carfentanil can be hundreds or even thousands of times more powerful than prescription opioids.

Opioid prescriptions rose from 107 million in 1992 to nearly 277 million in 2012 before declining to 239 million in 2016 (Pezalla et al., 2017). Nearly 92 million adults, or about 38% of the population, reported that they took a legitimately prescribed opioid in 2015 (Han et al., 2017). Roughly 21% to 29% of patients prescribed opioids for chronic pain misuse them and between 8% and 12% develop an opioid use disorder. In 2016, about 42,000 deaths, or 115 deaths every day, were attributed to an opioid overdose (NIDA, 2018).

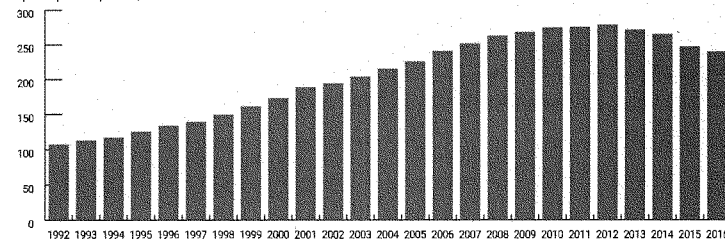


**FARS has
codes for
158 different
opioids.**

FIGURE 7

Opioid Prescriptions, 1992–2016

Opioid prescriptions, millions



Source: Pezalla, et. al. (2017)

Opioid use by drivers

Fatally-injured drivers, reported in FARS: In 2016, 1,064 drivers, or 19.7% of the drug-positive drivers, were positive for some opioid, slightly less than half as many as were positive for marijuana. The most frequent opioids were oxycodone (OxyContin, Percodan, Percocet) at 20% of all opioids, hydrocodone (Vicodin, Lortab, Lorcet) at 19%, morphine at 14%, fentanyl at 11%, and methadone at 8%. In 2006, 679 drivers, or 17.0% of drug-positive drivers, were opioid-positive.

In 2016, 54.3% of the fatally-injured drivers were tested for drugs. This means that 10.7% of all fatally-injured drivers were known to have been opioid-positive.

While the limitations of FARS data discussed above apply, the general conclusions are clear: opioids are present about half as frequently as marijuana in fatally-injured drivers and opioid presence has increased in the past decade.

Roadside survey data: In NHTSA's 2013-14 roadside survey, 4.7% of drivers on weekend nights and 5.5% on weekday days tested positive for opioids, considerably fewer than tested positive for marijuana (12.7% and 8.7%, respectively) (Kelly-Baker et al., 2017).

Opioid impairment and crash risk

Many studies document that opioids can cause drowsiness and can impair cognitive function, both of which can have obvious effects on driving (Dhingra et al., 2015; Strand et al., 2016).

Two reviews summarize what is known about opioid effects on crash risk. Gjerde et al. (2015) review 25 epidemiological studies. Seventeen of these found a statistically significant effect of opioid use on crash risk while the other eight did not. However, seven of these eight studies had either low statistical power or questionable designs. The authors conclude that opioids increase crash risk but do not provide a numerical estimate of the effect.

Chihuri and Li (2017) conducted a meta-analysis of 15 studies of prescription opioid effects, 10 of which analyzed crash involvement and 5 of which analyzed crash culpability. The summary effects across all studies were an increased risk of 2.29 for involvement and 1.47 for culpability.

Estimating the effect on crash risk is even more difficult for opioids than for marijuana. The most supportable conclusion is that opioids can increase crash risk by a factor of no more than about 2.

Drivers' views on opioids and driving

The opioid crisis results from a wide variety of societal issues produced by illegal opioids and the misuse of prescription opioids, most notably opioid-related deaths, not from opioid-impaired driving. Drivers probably consider illegal and prescription opioids quite differently. Illegal opioids, including prescription opioids taken illegally, are drugs which

Opioids are present about half as frequently as marijuana in fatally-injured drivers and opioid presence has increased in the past decade.



Opioids can cause drowsiness, impair cognitive function, and increase crash risk.

have no medical benefit and can impair driving. Driving after using them should be discouraged or prohibited. Opioids taken by prescription are medicines, taken to relieve pain. Their use is fairly common. In a 2017 national survey of drivers age 21 and above, 17% reported taking a prescription opioid in the past month. Of those who did, 64% said that they felt it was safe to drive (NSC, 2017).

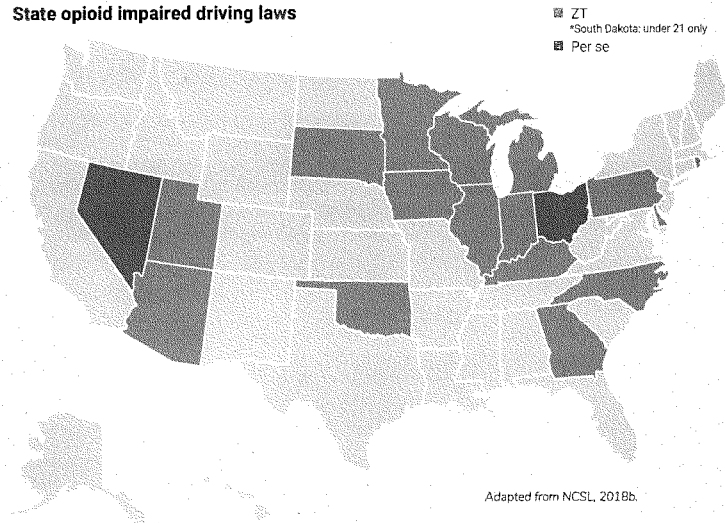
In another 2017 national survey of drivers, 90.8% said that other drivers who have used illegal drugs are a serious or somewhat serious threat to them, compared to 78.1% for other drivers who have used prescription drugs (AAAFTS, 2018).

Physicians prescribing opioids and pharmacists filling prescriptions may not warn patients of their possible effects. For example, FDA's prescribing advice for OxyContin says only "Warn patients not to drive or operate dangerous machinery unless they are tolerant to the effects of OxyContin and know how they will react to the medication" and the package insert says "Do not drive, operate heavy machinery, or participate in any other possibly dangerous activities until you know how you react to this medicine. OxyContin can make you sleepy." (FDA, 2018a; 2018b).

State opioid laws

Driving under the influence of opioids is covered by the same three types of state laws as driving under the influence of marijuana.

FIGURE 8
State opioid impaired driving laws



Driving Under the Influence of Drugs (DUID) is illegal in every state.	Zero Tolerance laws prohibit driving with any amount of specified drugs in the body.	Per se laws prohibit driving with an amount of a drug above a specified per se limit, similar to the 0.08 or 0.05 BAC per se laws for alcohol.
DUID has two requirements: an officer must observe signs that the driver is impaired and the impairment must be linked to a drug. Opioids can impair, so DUID laws apply to opioids.	As of April 2018, 16 states have zero tolerance laws for some or all opioids. South Dakota's zero tolerance law applied only to drivers under the age of 21. (NCSL, 2018d)	As of April 2018, Nevada and Ohio had per se laws applying to some opioids. (NCSL, 2018d)

Figure 8 (previous page) shows state opioid impaired driving laws as of April 2018.

Detecting marijuana- or opioid-impaired drivers

All impaired driving detection begins with a law enforcement officer stopping a driver for a traffic violation or observing a driver at a crash or a checkpoint. The officer determines if there is any reason to suspect that the driver is impaired by alcohol or a drug. This is based on what the officer observes about the driver's behavior and any other signs such as the odor of alcohol or marijuana, beer bottles, marijuana cigarettes, opioid pills, or the like.

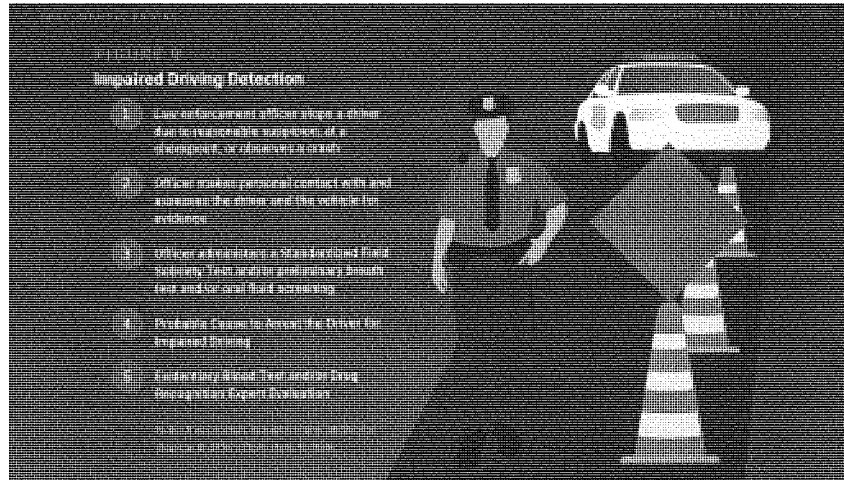
Standardized Field Sobriety Tests (SFSTs)

If impairment is suspected, the officer usually will begin by checking for impairment from alcohol using the SFSTs or Preliminary Breath Test (PBT) instruments. The SFSTs can rule out alcohol impairment and can provide a reasonable initial screen for impairment from marijuana and opioids (Porath-Waller and Beirness, 2014).

The procedures for making an arrest, obtaining a BAC from a breath or blood sample, prosecuting a Driving Under the Influence of alcohol (DUI) charge, and obtaining a conviction are far easier, quicker, and cheaper than for DUID. As a result, if an officer observes impairment and detects or suspects that alcohol is a cause, often only DUI evidence and charges will be pursued. Other drugs will be considered only if alcohol is ruled out or if the observed impairment is not consistent with the driver's BAC level (GHSA, 2015, 2018a). In states where marijuana use is illegal, officers who observe a driver impaired by marijuana often will pursue a charge of marijuana possession rather than DUID (GHSA, 2018; NHTSA et al., 2017).

Advanced Roadside Impaired Driving Enforcement (ARIDE)

Many officers have not been trained to recognize the behavioral signs of impairment by



drugs other than alcohol (GAO, 2015). The 16-hour ARIDE course provides officers with basic information on drug impairment, including the signs and symptoms of impairment produced by marijuana and opioids. Unlike the SFSTs, ARIDE typically is not included in basic police academy training. As a result, the number of ARIDE-trained officers varies considerably by state, from most patrol officers in some states to only a few in others (GHSA, 2015). In 2015, the last year for which nationwide data are available, 561 in-person ARIDE classes trained approximately 10,350 officers (IACP, 2017). Since 2009, approximately 55,000 officers have received classroom ARIDE training, only about 8% of the approximately 700,000 patrol officers nationwide. ARIDE training also is available online but the number of officers who have been trained online is not known. In a recent survey, 17 states reported that more than 20% of their officers have been ARIDE-trained (Fell et al., 2018). Several states would like to train more officers but resources are limited (GHSA, 2018a).

Oral fluid screening

A good oral fluid (saliva) device to test for the presence of marijuana or opioids would help roadside enforcement substantially (GAO, 2015). It would provide objective data to justify an arrest and to require a blood or urine sample for an evidential test and would identify the drug category that the evidential test should examine. It should be quick, easy, minimally invasive, and inexpensive. As of April 2017, 14 states authorize officers to collect oral fluid and test for drugs (Fell et al., 2018).

Several oral fluid devices are now available. The best current models may serve as useful roadside screeners. They are easy to use, are not intrusive, and can identify

55,000
The number of
officers who
have received
ARIDE training
between 2009
and 2015.

active marijuana (THC) and opioids as well as other major drug categories. They cost about \$20 per use and produce results in fewer than 5 minutes. They produce few false positives, and they correctly identify most drug-negative drivers. At least ten states have conducted field tests of oral fluid screeners, with promising results (Compton, 2017; Fell et al., 2018; Flannigan et al., 2017). In a formal evaluation, DRUID evaluated eight devices and found three that correctly identified more than 80% of both drug-positive and drug-negative drivers (Schulze et al., 2012). Lee and Huestis (2014) summarize the scientific basis of oral fluid testing as of 2014. Asbridge and Ogilvie (2015) summarize five studies that assessed the ability of four most commonly used oral fluid devices when used to detect six families of drugs. Beirness and Smith (2016) give a combined assessment of three common devices.

The currently available devices are not yet of evidential quality. While they may identify many drug-positive and drug-negative drivers, and help establish probable cause for an impaired-driving arrest, they cannot accurately measure drug concentrations. GAO (2015) concluded that "currently, there is no validated roadside drug-testing device." Compton (2017) agrees that "the accuracy and reliability of these devices has not yet been clearly established." NHTSA is evaluating five oral fluid devices with results expected shortly (NHTSA et al., 2017). Michigan began a year-long test of one device in five counties in November 2017. Results will be available in early 2019. Nine other states have conducted or are conducting pilot tests (Fell et al., 2018).

If oral fluid also could be used for evidential tests of marijuana and opioids, the advantages would be substantial:

- » Samples could be collected at roadside and later sent to a laboratory for confirmation, eliminating the delay in acquiring a blood or urine sample;
- » Oral fluid samples do not require a warrant in some states;
- » A positive oral fluid test indicates recent use (Flannigan et al., 2017); and
- » An oral fluid test combined with a breath alcohol test can identify poly-drug or drug-alcohol use.

Breath and fingerprint screening

A portable breath test device for marijuana similar to the PBT test for alcohol also would be valuable for roadside screening. Several companies, including Hound Labs and Cannabix, are developing marijuana breath test devices (Hound Labs, 2018; Cannabix, 2018). Hound Labs has begun field tests and hopes to have a device on the market in 2018 (Entrepreneur, 2017). Talpins, Holmes, Kelly-Baker et al. (2017) discuss the technology and legal implications of marijuana breath testing.

Devices which detect drug metabolites through traces of sweat in a fingerprint also are being developed. If successful, they also could be used for roadside screening. Talpins, Holmes, and Sabet (2017) briefly discuss how transdermal drug detection has been used in other settings for some time and give development plans for one company's device.



Oral fluid screening devices may identify drug-positive drivers and help establish probable cause for an impaired-driving arrest, but they cannot accurately measure drug concentrations.

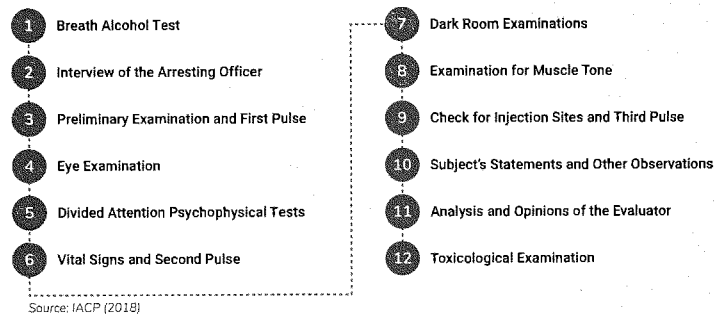
Arrest, prosecution, and adjudication of marijuana- or opioid-impaired drivers

If an officer has sufficient evidence at the roadside to justify a DUID charge, the driver is arrested and taken to a police station or other processing area. There are two main tasks at the station in addition to the standard procedures for an arrest: to obtain additional behavioral evidence of impairment by drugs and to obtain a blood or urine sample for chemical analysis.

Behavioral evidence: DEC

The Drug Evaluation and Classification (DEC) program trains officers to be Drug Recognition Experts (DREs) who can identify the signs and symptoms of impairment by different categories of drugs. At the police station a DRE performs a 90-minute 12-step evaluation including both behavioral tests and a physical examination. See IACP (2017) for more information on DEC.

FIGURE 10
The DRE 12 Step Process



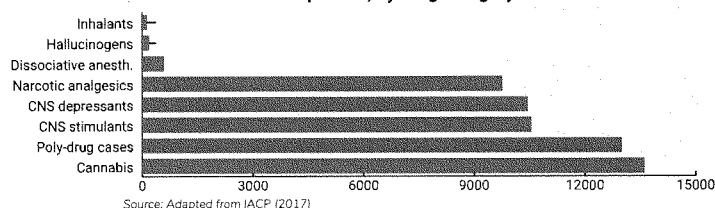
DREs usually are quite accurate in confirming a driver's drug impairment and identifying the type of drug responsible for the impairment (Porath-Waller and Beirness, 2014), in particular, identifying marijuana (Hartman et al., 2016). The DEC program's main challenges are the expense of training and the need to provide adequate coverage. The DRE training of 72 hours in the classroom and 40 to 60 hours in the field takes an officer away from regular duties for three to four weeks. DREs typically are highly qualified officers. They often are promoted rapidly to an administrative position, so that another officer must be trained to replace them as a DRE.

To be effective, a DRE should be available to evaluate a substantial proportion of drivers suspected of impairment by drugs. This means that a state must have an adequate number of DREs and they should be located throughout the state. Several states would like to have more DREs but resources are limited (GHSA, 2018). GHSA has partnered with Responsibility.org since 2016 to provide training grants to states. Nine states received a

total of \$180,000 in these two years, which helped train 940 officers in ARIDE and 107 in DRE. More grants will be awarded in 2018. The US Department of Transportation's FY 2018 spending bill enacted in March 2018 provides an additional \$5,000,000 for activities to reduce impaired driving, including ARIDE and DEC training.

In 2016, the last year for which national data are available, 1,543 DREs were trained, bringing the total of active DREs to 8,277 (IACP, 2018). They conducted 31,421 evaluations of drivers suspected of impairment due to drugs. Marijuana was the most frequently identified drug category in 2016 at 13,603, or 31% of all drivers evaluated. Stimulants were second at 10,543, followed by depressants at 10,446 and opioids at 8,678.

2016 DRE enforcement evaluation opinions, by drug category



While a DRE evaluation can add substantially to a DUI case, it's not essential. The critical components are behavioral evidence consistent with impairment by a drug and a laboratory test to confirm the drug's presence.

Chemical evidence: blood or urine tests

A chemical test of a driver's blood, urine, or saliva provides objective proof of the presence or absence of drugs in a driver's body. Blood tests are the most accurate and most commonly used (Logan et al., 2013; GAO, 2015). An officer can request a blood sample from a driver arrested for DUI, but the driver may refuse, as did 31% of recent DUI arrestees in Colorado (Davis, 2015). State laws on the consequences of refusal vary substantially.

Obtaining a blood sample can take several hours. A search warrant from a judge is required for a non-voluntary blood draw except in rare circumstances. Electronic warrants (e-warrants) can speed up this step considerably, allowing officers to request and receive warrants in their patrol cars on tablets, smartphones, or computers. Currently, 45 states include language either in legislation or in court rules allowing e-warrants (Borakove and Banks, 2018). Although legislation is recommended for e-warrant systems as it creates consistency, it is not necessary. Many law enforcement agencies are currently considering transitioning to an electronic warrant system to improve efficiency. See Borakove and Banks (2018) for more information on e-warrants.

If a trained phlebotomist is not available to draw a blood sample at the police station, the driver may need to be transported to a hospital or clinic. The delay from the driver's

Obtaining a blood sample can take several hours. Electronic warrants (e-warrants) can speed up this step considerably.

first contact with law enforcement at the roadside until a blood sample is drawn may allow the driver's drug concentration to drop considerably (GAO, 2015). Some law enforcement agencies are training officers to serve as phlebotomists so that blood can be drawn quickly (Grondel, 2018).

Analyzing a blood sample can be expensive: about \$250 in Vermont (NHTSA et al., 2017) and \$300 in Colorado (Davis, 2015). Some states do not have the capacity to process all the blood tests produced by DUID arrests so must use expensive private laboratories. Laboratory backlogs may produce long delays until results are available, sometimes up to six months, so that some DUID cases may need to proceed without the test results (GAO, 2015; GHSA, 2015; NHTSA et al., 2017). Laboratory test procedures are not standardized so that different laboratories test for different drugs and use different threshold values, even within the same state (Logan et al., 2014; GAO, 2015; GHSA, 2018a).

Finally, as with marijuana, a driver with a detectable amount of an opioid is not necessarily impaired.

Prosecution and adjudication

Many prosecutors and judges are not familiar with DUID cases. If a case involves both DUID and DUI, prosecutors usually will bring only the DUI charge because it is easier to explain to the judge and jury and is less expensive to prosecute (NHTSA et al., 2017; Thomka, 2014). Marijuana in particular may be perceived by judges and juries as "just marijuana" and medical or recreational marijuana may be legal in the state where the case is tried.

Prosecutors, judges, and juries accustomed to alcohol impairment may not understand that drug impairment differs. Judges and juries understand drunk driving. But they may not believe that marijuana, especially in recreational or medical marijuana states, or opioids, used as prescribed, may impair driving. An officer's description or a video recording of a drug-impaired driver's roadside behavior will differ from what judges and juries expect of a drunk driver (Thomka, 2014). Some states report that judges expect a specific drug concentration that's considered impairing, similar to .08 BAC (GHSA, 2015). Others note that judges may not accept DRE evidence of impairment (GHSA, 2015, 2018).

Prosecutors and judges both need training in DUID (GAO 2015; NHTSA et al., 2017). Prosecutor training is provided by the National Traffic Law Center (NTLC) and the National Center for DWI Courts (NCDC). Information is available from the [National District Attorneys Association](#) and [NCDC](#).

Most states have a Traffic Safety Resource Prosecutor (TSRP) who can help provide education and training to prosecutors. See the [contact list](#) as well as for other resources available through NTLC.

Courses and webcasts for judges are offered through the National Judicial College (NJC). Recent offerings include Properly and Effectively Adjudicating Drugged Drivers, Marijuana and Impaired Driving, Drugged Driving Essentials, and The Role of the Judge in Drug-Impaired Driving Cases. See www.judges.org/2018courses/ for the complete schedule.

Some states have developed their own training for law enforcement, prosecutors, and judges.

Challenges and opportunities: strategies to reduce marijuana- and opioid-impaired driving

The previous sections have described briefly the complex and confusing state of knowledge and state practices surrounding the issue of driving while impaired by marijuana or opioids. This section summarizes the challenges faced by states and provides recommendations on strategies to address them.

Public attitudes and education

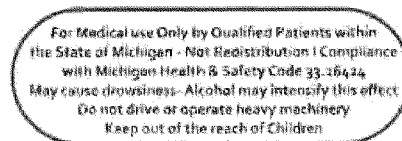
The public in general does not understand that marijuana and opioids can impair driving and can cause crashes. In particular, many drivers who use marijuana regularly also drive after use. They often believe that their marijuana use doesn't impair or even improves their driving. Similarly, many drivers who use prescription opioids feel that they can drive safely after use.

Education is needed to inform the public and change these beliefs. Unless drivers understand the risks of driving after using marijuana or opioids, other strategies will have limited effectiveness. States are well aware of the need for better public education on marijuana, opioids, and driving (GHSA, 2018; NHTSA et al., 2017).

Marijuana messaging must address two points: that marijuana can impair driving and that driving while impaired by marijuana is illegal. A deterrent message alone – that marijuana-impaired drivers will be arrested and punished – may have little effect because of the low rate of successful detection, arrest, and prosecution. Information on marijuana's impairing effects also may help create a social norm regarding marijuana use and driving similar to the well-established norm regarding alcohol-impaired driving (Capler et al., 2017; Davis et al., 2016; TIRF, 2017; Aston et al., 2016). The marijuana industry should help establish this norm.

Medical marijuana states may provide explicit warnings on the marijuana container regarding driving after using marijuana. Figure 11 shows Michigan's label.

FIGURE 11



The public in general does not understand that marijuana and opioids can impair driving and can cause crashes.

Opioid messaging must address two audiences. Drivers who take prescription opioids to relieve pain need to understand the warnings on the medication bottle regarding how long they must wait after taking the medication before driving. Physicians and pharmacists can deliver this message when a prescription is written and filled. While many physicians and pharmacists provide appropriate warnings for prescription opioids, some do not (Pollini et al., 2017).

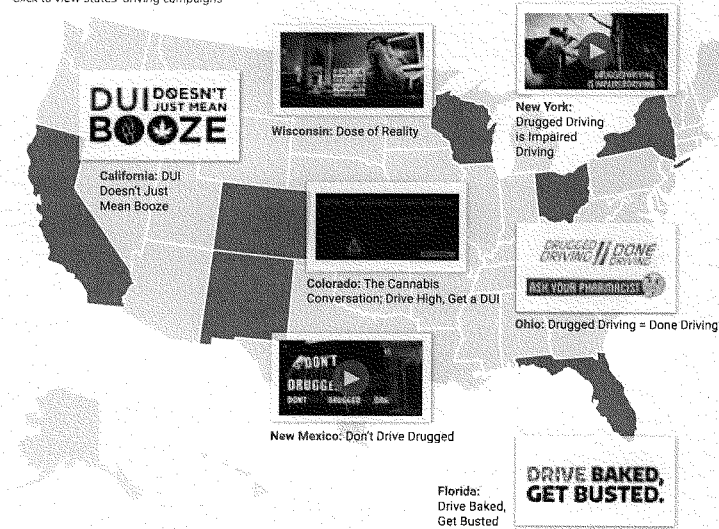
Drivers who use opioids illegally may not be affected by information about opioids and driving. For them, the deterrent message of detection, arrest, and prosecution may have more effect. It may not be necessary to mount a specific campaign because users already know that possession and use is illegal and will lead to penalties if detected. SHSOs may be able to join with public health agencies in a combined message that opioid abusers can be detected through their impaired driving.

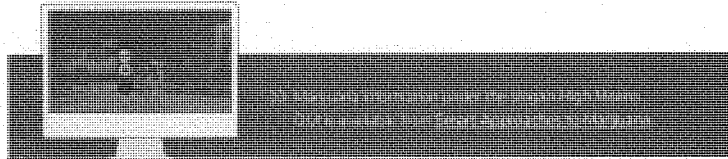
Several states have ongoing drug-impaired driving campaigns addressing impaired driving in general, marijuana, or opioids. Examples include:

The marijuana industry should establish social norms regarding marijuana use and driving similar to the norms surrounding alcohol-impaired driving.

FIGURE 12
Drug-impaired driving campaigns

Click to view states' driving campaigns





Recommendation: States should add drug-impaired driving messages, especially regarding marijuana and prescription drugs, to their impaired driving campaigns. Marijuana messages are particularly important in states in which recreational or medical use is legal or is likely to be authorized.

Research need: Develop a consistent marijuana message based on research, such as "Don't drive within XX hours of using marijuana," where XX is a number supported by research. Develop national drugged-driving messages and materials that states can use for state-level campaigns.

Recommendation: States should consider a campaign with physicians and pharmacists on prescription opioid warnings. States may wish to cooperate with public health agencies to deliver joint messages to the public.

Roadside detection

States recognize that roadside detection is the critical first component in enforcing DUI/DWI laws (GHSA, 2018). The initial step in evaluating a driver's impairment, SFST, is fully established nationwide. The next step, to identify the behavioral signs of impairment by drugs, is not. ARIDE provides that step. ARIDE training for at least a majority of patrol officers should be within a state's budget. Several states recognize the need for more ARIDE-trained officers (GHSA, 2018).

Recommendation: States should train at least a majority of their patrol officers in ARIDE.

Oral fluid screening

Oral fluid screening offers substantial opportunities for improving marijuana and opioid detection. It would be quick, easy, relatively inexpensive, require little training, and would provide objective evidence of drug presence. It would identify poly-drug or drug-alcohol use.

Recommendation: States should seriously consider at least a test of oral fluid devices.

Research recommendation: NHTSA should publish its evaluation of oral fluid devices promptly. If some devices are acceptable, NHTSA should publish a list of approved devices. States conducting oral fluid field tests should publish the results.

Breath tests

The marijuana breath test instruments currently in development hold great promise. They likely would be cheaper and quicker to use than oral fluid devices. While they are specific to marijuana, that is by far the drug detected most frequently in drivers.

Recommendation: States should closely follow the development of marijuana breath test instruments and should seriously consider a pilot test if and when they become available.

Marijuana breath test instruments in development hold great promise.

Arrest

DEC, while expensive, is a highly effective method to confirm a driver's impairment, determine the category of drugs that produced the impairment, provide a solid foundation for obtaining a blood sample for testing, and produce evidence that can be presented in court if necessary. Many states would like to have more trained DREs (GHSA, 2018).

Recommendation: States should train an adequate number of DREs to address their DUI/DUID problem, consistent with law enforcement resources. Grant funds have been and may continue to be available to help states train DREs.

Prosecution and adjudication

Many prosecutors and judges need training in all aspects of drug-impaired driving.

Recommendation: States should encourage prosecutors and judges assigned to DUI/DUID cases to participate in appropriate training.

Failure to pursue DUID when a driver is impaired by alcohol

If a driver's BAC exceeds the per se limit of .08 (.05 in Utah), officers often will not check for drug impairment. A DUID charge requires far more time and resources to obtain evidence. Prosecutors may drop a DUID charge in favor of DUI because DUI is easier to present in court and obtain a conviction. Even if convicted, the penalties may be the same as for DUI alone. This failure has consequences. The size of the drugged driving problem is underestimated. Also, drivers are led to believe that DUID is less serious than DUI.

Recommendation: Officers should be encouraged to investigate drug impairment even when alcohol is suspected. Good roadside oral fluid or marijuana breath test devices would make drug investigation considerably easier, faster, and cheaper. Similarly, prosecutors should pursue DUID charges when they are supported by the evidence.

Electronic warrants

A blood draw in most states requires the officer to obtain a warrant (NHTSA et al., 2017). This can take an hour or more, which is an inefficient use of the officer's time and

means that drug concentrations in the blood can diminish. Electronic warrants solve this problem: they can be obtained quickly, without a personal visit. Currently, 45 states include language either in legislation or in court rules allowing e-warrants (Borakove and Banks, 2018).

Recommendation: States that do not allow electronic warrants should authorize them. If authorized, law enforcement agencies should implement electronic warrants as needed.

Test refusal

Some states noted that drivers may refuse to provide a blood sample or refuse to submit to a DRE's evaluation. States typically have addressed this issue in DUI investigations by making the penalty for refusing a test equivalent to that for failing the test.

Recommendation: States should examine their laws and should provide appropriate penalties for drug test refusal.

Urine tests

Some states test for drug presence using urine rather than blood. Urine tests will not measure THC but only non-impairing metabolites.

Recommendation: States should require blood testing for drugs rather than urine testing.

Laboratory procedures, costs, and delays

An accurate assessment of drug-impaired driving requires standardized laboratory test procedures across the country. The National Safety Council has developed recommendations which should be accepted and implemented (NHTSA et al., 2017). Forensic laboratories in some states lack the capacity to conduct the volume of drug tests produced by the rise in marijuana and opioid use by drivers.

Recommendation: States should invest in forensic laboratory capabilities to provide adequate testing for drivers arrested for DUI/D.

Research recommendation: Agree on national recommended standards for laboratory test procedures.

Changes in laboratory test procedures are difficult and may take considerable time. A promising solution lies with roadside testing. Good roadside oral fluid test devices or marijuana breath test devices may reduce the need for prompt laboratory test confirmation. An evidential-quality oral fluid device may reduce it even further.

Per se laws

DUI charges, prosecution, and adjudication are simplified by per se laws: if a driver's BAC exceeds the per se limit, the driver is presumed guilty of DUI, though behavioral evidence of impairment is needed to back up the chemical evidence. The DUI per se

laws are justified because of the overwhelming scientific evidence that drivers are impaired when their BAC reaches the per se level.

While many wish that per se limits could be justified similarly for drugs in general and marijuana in particular, they cannot (Compton, 2017; GAO, 2015). This hasn't stopped some states from implementing either zero tolerance or per se laws, as discussed previously. Zero tolerance laws are easy to understand and can be justified for illegal drugs. However, they are problematic for opioids taken by prescription or for marijuana in medical or recreational states.

Laws with a positive per se limit are even more problematic to justify. They send a message that lower levels do not impair, which is false. Unlike alcohol per se limits, they are difficult for the driving public to understand. A "standard drink" of alcohol is a 12 oz. beer, a 5 oz. glass of wine, or a normal mixed drink. Drivers generally understand how many standard drinks are required for them to reach the per se limit. There's nothing equivalent for marijuana or opioids. It is usually straightforward to measure a driver's BAC within an hour of a crash or arrest using the evidential breath test equipment found in police stations. Because BAC dissipates gradually, this gives a reasonably accurate estimate of BAC before the crash or arrest. THC and opioids require blood to be drawn, which can take hours from the time of the crash or arrest, enough time for their concentrations to decrease substantially. And drug concentration in blood does not correlate well with impairment.

Recommendation: Per se laws for marijuana or opioids are not recommended. States wishing to consider them should understand that they have little scientific basis and should consider the message they may send to drivers. Zero tolerance laws for illegal drugs may be appropriate.

Per se laws for marijuana or opioids are not recommended. States wishing to consider them should understand that they have little scientific basis.

Data

Marijuana and opioid involvement in impaired driving crashes are underestimated because of poor data. Improving the data will not be easy but is necessary.

Drivers in fatal crashes

Only 64% of fatally-injured drivers were tested for drugs in 2015. Some states test well over 90% of fatally-injured drivers. This typically results from a medical examiner policy of drawing blood from all persons who died accidentally and testing for drugs and alcohol. Better data would help understand the role of marijuana and opioids in these most serious of crashes.

Recommendation: Test all fatally-injured drivers, and all surviving drivers in a fatal crash who may be at fault, for drugs and alcohol.

Drivers arrested for impaired driving

Ideally, all impaired driving arrestees should be tested for both alcohol and drugs. The costs of laboratory testing make this impractical at present. When and if good and cheap roadside oral fluid or marijuana breath test devices are available, states should consider testing all arrestees.

Recording impaired driving

Some states do not have a separate DUID offense but use DUI for driving impaired by either alcohol or drugs. While 34 states and D.C. report DUI and DUID arrests separately, only 2 states—Maryland and Washington—have state laws that distinguish DUI and DUID (Fell et al., 2018). This makes it difficult to estimate the role of drugs in crashes and on the road.

Recommendation: States should establish a separate DUID offense equivalent to DUI.

Another method of recording drug-impaired drivers is to include arrest and crash data elements for law enforcement to record. The 2017 Model Minimum Uniform Crash Criteria (NHTSA, 2017) provides models. The crash and driver drug data elements follow; the alcohol elements are similar.

» **C26. Drug involvement.** Law enforcement suspected or documented that at least one driver or non-motorist involved in the crash had used drugs.

» **P22. Law enforcement suspects drug use.** Driver or non-motorist involved in the crash suspected by law enforcement to have used drugs.

» **P23. Drug test** (test status, type, result)

These data elements would allow states to track drug-involved drivers much more accurately than at present without requiring changes to their impaired-driving laws and without requiring full DUID investigations.

Recommendation: States should record suspected and confirmed DUID drivers in their arrest and crash records.

Moving forward

After deciding what can or should be done, the critical question is how to get it done. Here are some broad conclusions from this review and some suggestions on how to implement the recommended strategies.

It's not drugs or alcohol, it's impaired driving

The basic traffic safety issue is to prevent driving while impaired by a substance that a driver has swallowed or injected or otherwise introduced into his or her body. While alcohol has been the most common impairing substance for many years, drug use has increased recently. The basic components of and strategies for addressing impaired driving are the same for alcohol and drugs: convincing drivers not to drive while impaired, detecting an impaired driver, observing and recording behavioral evidence of impairment consistent with alcohol or a drug, obtaining chemical evidence of alcohol or drugs, and assessing and treating alcohol or drug dependence or addiction.

The basic components of and strategies for addressing impaired driving are the same for alcohol and drugs.

- » Drivers choose to use both alcohol and drugs. While some drugs are prescribed by physicians, for example to relieve pain, alcohol and many drugs are used because they make the driver "feel good" in some way.
- » Driving after using alcohol or drugs also is a choice. Drivers can choose not to drive after using alcohol or drugs, or they can choose not to use alcohol or drugs before driving. Impaired driving messages make this point: "Don't drink and drive." "Choose a designated driver." "Do not drive or use heavy machinery (after using this drug)."
- » Drivers impaired by alcohol or drugs are detected initially in the same way. A law enforcement officer may observe someone driving erratically or violating a traffic law, or a driver may be involved in a crash or stopped at a checkpoint. The officer then determines if the driver shows signs of impairment and if any impairment could be due to alcohol or drugs. If the officer has probable cause to believe the driver is impaired by alcohol or drugs, then the driver is arrested.
- » A DUI or DUID charge usually requires solid behavioral evidence of impairment backed up by chemical evidence of alcohol or drugs.
- » Drivers arrested for DUI or DUID should be assessed for substance dependence and mental health disorders, and treated if appropriate.

DUID differs from DUI only in some methods needed to implement the basic strategies.

- » Education: messages to drivers differ somewhat for alcohol and for different drugs.

- » Behavioral signs of impairment: alcohol and different drugs affect behavior in different ways and so produce different behavioral signs.
- » Chemical evidence: alcohol can be measured accurately in breath while drugs must be measured in blood, urine, or saliva. Impairment from alcohol is strongly related to the amount of alcohol in the body, measured by BAC. There is no similar relation between the amount of a drug in the body and impairment.

DUID consequently requires some additional tools to be added to the alcohol-impaired driving toolkit. But it's the same toolkit.

To integrate marijuana and opioids, as well as other drugs, into a state's impaired driving activities, states should address the five issues discussed in this report.

- » Public education, by including messages that drugs can impair driving and by educating physicians and pharmacists on opioid warnings.
- » Roadside detection of drugs, perhaps with oral fluid or marijuana breath test devices.
- » Training for law enforcement via ARIDE and DEC; education for prosecutors and judges.
- » Policies and laws, including electronic warrants, test refusal, use of blood rather than urine tests, and laboratory procedures.
- » Data, to provide more accurate and complete data on DUID in arrests and crashes.

How to do it?

Implementing these recommendations requires resources. States should consider three ways to supplement their usual funding sources. First, some grants are available to assist DUID; more may be forthcoming. Next, consider joining with public health agencies and health care providers as partners in addressing the opioid epidemic. Finally, if a state legalizes recreational marijuana, then some of the tax revenue from marijuana sales should be directed to marijuana-impaired driving programs.

The last word

A critical SHSO mission is to convince drivers to drive responsibly, alertly, and unimpaired. Marijuana and opioids add different forms of impairment. They require some new tactics to detect impaired drivers; link impairment to a drug; prosecute, adjudicate, and treat offenders; and above all educate drivers and the public. They join with and build on the familiar methods to address alcohol-impaired driving. Impaired driving program focus should not shift to marijuana and opioids exclusively but should expand to include marijuana and opioids along with alcohol.

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National Partnership on
Alcohol Misuse and Crime



Institute for Behavior and Health, Inc.



TOWARD A MODEL DUI LAW

DUI National Model Law Initiative: Defining the Crimes

An estimated 9,967 people were killed in alcohol-impaired driving crashes in 2014, comprising 31% of all traffic-related deaths in the United States.¹ An unknown number were killed in drugged driving crashes. Every state and territory in the United States has a system of laws designed to address impaired driving; however, the laws vary dramatically in scope and effectiveness. In order to remedy this, the Institute for Behavior and Health, Inc. (IBH) and National Partnership on Alcohol Misuse and Crime (NPAMC) began collaborating on a national model Driving Under the Influence (DUI) law in April 2010.

They convened a committee of prosecutors, toxicologists and other traffic safety experts to review a model drafted by NPAMC CEO Stephen Talpins based on effective laws from around the country. The committee was co-chaired by Omaha City Prosecutor Marty Conboy and the National District Attorneys Association's (NDAA) National Traffic Law Center (NTLC) Senior Attorney, Mark Neil. Committee members included: Clay Abbot, Laura Bailey, Lara Baker, Bruce Chalk, Lee Cohen, Roger Doherty, Elizabeth Earleywine, Laurel Farrell, Paul Glover, Susan Hackworthy, Robert Forrest, Jennifer Messick, Rodney Owen, Corinne Shea, Robert Voas, and David Wallace.

The committee recommended several changes which were reviewed by Stephen Talpins and IBH President Robert L. DuPont. They adopted most of the recommended changes resulting in a model that represented the thinking of the nation's DUI experts. On November 1, 2010, they released the first set of provisions defining the crimes of alcohol and/or drugged driving and "internal possession" of chemical and controlled substances.

¹ National Center for Statistics and Analysis. (2015, December). Alcohol-impaired driving: 2014 data. (Traffic Safety Facts. DOT HS 812 231). Washington, DC: National Highway Traffic Safety Administration

*Model DUI Law: DUI and Internal Possession of a Chemical or Controlled Substance, Defined***Section _____****Prohibiting driving under the influence of alcohol or drugs; definition**

(1) A person is guilty of the offense of driving under the influence and is subject to punishment as provided in subsection (2) if the person is driving or in actual physical control of a vehicle anywhere within this state and:

- (a) The person is under the influence of alcoholic beverages, a chemical or controlled substance as defined in s. _____, any other impairing substance or any combination of two or more of these substances while impaired to the slightest degree; or
- (b) The person has an alcohol concentration of 0.080 or more grams of alcohol per 100 milliliters of blood, 0.080 or more grams of alcohol per 210 liters of breath at the time of driving; or
- (c) The person has an alcohol concentration of 0.080 or more grams of alcohol per 100 milliliters of blood or 0.080 or more grams of alcohol per 210 liters of breath at the time of driving or any time after driving as a result of alcohol consumed before or during driving; or
- (d) There is any amount of a Schedule 1 chemical or controlled substance as defined in s. _____¹ or one of its metabolites or analogs in the person's blood, saliva, urine, or any other bodily fluid; or
- (e) There is any amount of a Schedule 2, 3 or 4 chemical or controlled substance as defined in s. _____ or one of its metabolites or analogs in the person's blood, saliva, urine or any other bodily fluid. The fact that a person charged with violating this provision consumed the drug pursuant to a prescription issued by a licensed health professional authorized to prescribe it and injected, ingested, or inhaled the controlled substance in accordance with the health professional's directions shall constitute an absolute affirmative defense against any charge of violating this provision related to that particular drug, but no other substance and not any other provision under subsection 1.
- (f) With the exception of (1)(e), the fact that any person charged with violating this subsection is or was legally entitled to consume alcohol or to use a controlled substance, medication, drug or other impairing substance, shall not constitute a defense against any charge of violating subsection 1.

Section _____**Prohibiting the Internal Possession of Chemical or Controlled Substances**

Any person who provides a bodily fluid sample containing any amount of a chemical or controlled substance as defined in s. _____ commits an offense punishable in the same manner as if the person otherwise possessed that substance.² The fact that a person charged with violating this provision consumed the drug pursuant to a prescription issued by a licensed health professional authorized to prescribe it and

¹ Pursuant to 21 USC Sec. 812, Schedule 1 drugs or substances have a "high level of abuse" and "no currently accepted medical use in treatment in the United States."

² This crime would be the equivalent of possession of a controlled substance and would be punished in the same manner.

injected, ingested, or inhaled the controlled substance in accordance with the health professional's directions shall constitute an absolute affirmative defense against any charge of violating this provision.

NOTE: This provision is not a DUI specific law. Rather, it applies to any person who tests positive for chemical or controlled substances. Because so many DUI offenders are tested for drugs, we include this provision in our model.

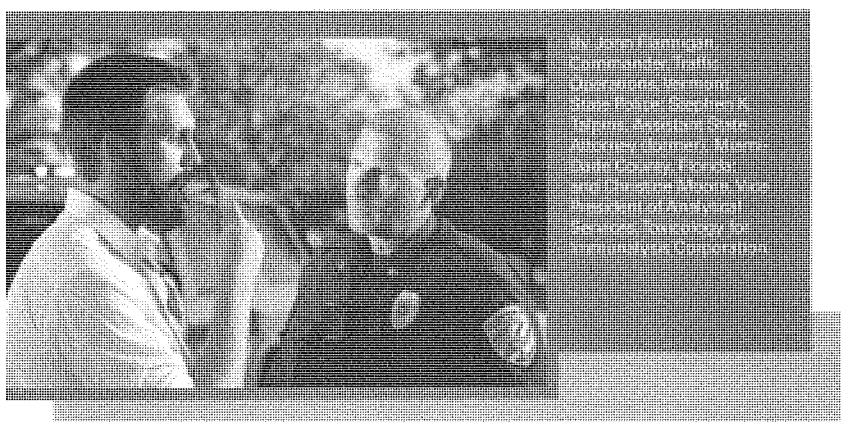
About the National Partnership on Alcohol Misuse and Crime

The National Partnership on Alcohol Misuse and Crime (NPAMC) is a public-private partnership established to bring together stakeholders in the issue of alcohol misuse and crime in order to effectively change the way the United States justice system manages and rehabilitates offenders who misuse alcohol. Established in April 2008, NPAMC is comprised of more than 50 participating organizations and their representatives, including scientists and researchers, justice professionals, victims groups, treatment professionals, the corrections industry, pharmaceutical and technology companies, policy experts and distilleries. For more information, please visit the NPAMC website at www.alcoholandcrime.org.

About the Institute for Behavior and Health, Inc.

Founded in 1978, the Institute for Behavior and Health, Inc. (IBH) is a 501(c)3 non-profit organization that identifies, develops and promotes new ideas to reduce the use of illegal drugs. For more information, please visit www.ibhinc.org and www.StopDruggedDriving.org.

Oral Fluid Testing for Impaired Driving Enforcement



Law enforcement, traffic safety professionals, criminal justice professionals, and social advocates have worked together to address alcohol-impaired driving, for decades, dramatically reducing its prevalence and saving tens of thousands of lives.¹ Unfortunately, far less time and resources have been devoted to an equally significant and related problem: driving under the influence of drugs (DUID). In fact, the National Highway Traffic Safety Administration (NHTSA) did not test biological samples from drivers for drugs during the National Roadside Survey (NRS) until 2007 when data showed that 16.3 percent of weekend nighttime drivers tested positive for drugs; marijuana accounted for almost half of the positives. To put this in perspective, 12.4 percent of weekend nighttime drivers tested positive for alcohol, and less than 2.2 percent of weekend drivers tested above the legal limit (0.08) for alcohol.²

Further, the results showed a 97 percent agreement between blood and oral fluid when collected simultaneously and tested for drugs, indicating that oral fluid is a viable alternative to blood for the detection of drugs in drivers.

Many outside the enforcement community were surprised to learn that drug-impaired driving was as much of a problem as alcohol-impaired driving; however, the real surprise came in the most recent data. In the 2013–2014 NHTSA survey, 22.5 percent of weekend nighttime drivers tested positive for drugs, while only 8.3 percent tested positive for alcohol (1.5 percent were above the legal limit).³ As one would expect, an increasing prevalence of drugged driving is likely to cost lives. The number of drivers involved in fatal motor vehicle crashes who tested positive for drugs increased from 28 percent in 2005 to an astounding 32 percent in 2012.⁴ These trends are not surprising for

two reasons. First, the U.S. population is aging and becoming more dependent on potentially impairing prescription medications.⁵ Second, more states have legalized cannabis for medical or recreational purposes.⁶ A recent NHTSA report indicated that the prevalence of marijuana in drivers in Washington State increased significantly since the implementation of legal retail marijuana sales in 2014. In daytime, when children and the elderly are more likely to be outside, the rate of THC identification in drivers almost doubled from 7.8 percent prior to cannabis legalization to 18.9 percent one year after legalization. The prevalence in nighttime drivers also increased (17.5 percent to 22.2 percent), but this was not considered statistically significant.⁷

Law enforcement can use the same success reducing the incidence and impact of drugged driving it has with alcohol-impaired driving by applying some of the

same forensic testing strategies. In this article, the advantages and pitfalls of testing drivers for drugs using biological samples, specifically oral fluids, are presented.

Forensic Testing

Driving behavior is adversely affected by many drugs, including prescribed, over-the-counter, or illegal substances. Drivers under the influence of cannabis tend to think they are better drivers because they drive more slowly; however, their reaction time is also affected, so the ability to react appropriately to an outside event, such as a child running into the road, is diminished. Cocaine and amphetamines (stimulants) may sharpen the reaction time of drivers, but also increase high-risk behavior, such as speeding, or cause dangerous side effects in drivers (e.g., vision problems). Pain medications such as hydrocodone and oxycodone can cause drowsiness, especially at the beginning of treatment cycles.

Traditionally, officers test suspected impaired drivers for drugs by collecting blood or urine samples and submitting them to a forensic laboratory. Both specimen collections are intrusive, require officers to handle biological samples (which most officers prefer not to do), and are relatively expensive. Additionally, each presents its own unique challenges. Oral fluid testing provides some important advantages over both.

Urine: Urine results do not correlate as well with impairment as blood and oral fluid testing do because its window of detection can extend for days, especially in the case of marijuana. Further, only a gender-appropriate officer can collect a urine sample (officers should watch the subjects provide their sample), and it can take hours to provide a specimen.

Blood: Blood is generally considered to be the "gold standard" in testing drivers for drugs as it reflects recent use and indicates drugs circulating in the body. However, only medically trained professionals may collect blood samples, so most jurisdictions need to rely on doctors, nurses, or paramedics to collect samples; in some areas, officers may be trained as phlebotomists. Problems with blood testing include the time between traffic stop and sample collection—it may take 1.5–2 hours to locate an appropriate individual to perform the collection. During this time, the drugs are dissipating from the driver's body, so lower drug levels are measured in the laboratory test than were present at the time of the impaired driving incident. Further, in the jurisdictions where external professionals perform the collection, prosecutors often have difficulty proving chain of custody, and laboratories with limited resources might not be able to provide a witness for trial or might not have the instrumentation to test samples because blood analysis is more complicated and expensive than urinalysis.⁸ However, despite the associated challenges, blood confers an advantage over urine and oral fluid tests because it can be used to measure blood alcohol concentration (BAC).

Oral fluid: The agreement between the results in blood and oral fluid in the 2007 NHTSA survey was largely due to the fact that they were collected almost simultaneously. As discussed above, in the real world, the collection of blood samples may take place a few hours after the traffic stop as medical personnel are necessary for collections, and that time gap allows drugs in an individual to dissipate. Oral fluid, which is essentially a reflection of free drugs in the blood, can be collected under the observation and supervision of an officer much more quickly following a traffic incident and is, therefore, a more reliable indicator of drugs present in the body at the time of the stop. Active drugs detected in saliva (e.g., THC or cocaine) are indicative of recent intake, not historical use.

The cost for the laboratory analysis of oral fluid is essentially the same as the cost for blood analysis because similar instrumentation is used; an additional cost is that of the oral fluid collection device itself, which generally contains a pad and liquid buffer to stabilize any drugs during storage and transportation; however, medical personnel are not necessary for the collection process, so the time and expense associated with blood collections are eliminated.

The Admissibility of Blood and Urine Testing Under the *Frye* and *Daubert* Standards

U.S. courts traditionally determine the admissibility of new or novel scientific evidence pursuant to the *Frye* standard. The *Frye* standard derives from a 1923 U.S. Supreme Court case involving the admissibility of the systolic blood pressure deception test, an early version of lie detector tests. The systolic blood pressure deception test was predicated on the theory that "truth is spontaneous, and comes without conscious effort, while the utterance of a falsehood requires a conscious effort, which is reflected in the blood pressure." The court ruled that scientific evidence is admissible only if its underlying theories and procedures are generally accepted in the relevant scientific community or if they have passed from the stage of experimentation and uncertainty to that of reasonable demonstrability.⁹

While some states continue to apply the *Frye* standard or a modified version, U.S. federal courts and the majority of states apply a "relevancy standard." This standard often is referred to as the *Daubert* standard after the U.S. Supreme Court case that first employed it.¹⁰ In that case, the court ruled that scientific testimony and evidence may be admitted only when it is reliable and relevant. The court held that the proponent of expert testimony may establish reliability and relevancy by proving that (1) the expert is qualified; (2) the expert employed reliable methods to reach his or her conclusions; and (3) the expert's testimony would help the fact finders understand the evidence or to determine a fact in issue.

The *Daubert* court laid out a non-exhaustive list of five factors to consider in determining the reliability of scientific evidence: (1) whether the methods can be tested; (2) whether the methods have been peer reviewed; (3) whether there are known error rates; (4) whether there are established standards for applying the method; and (5) whether the methods are generally accepted. Since then, courts have considered additional factors, including whether the expert accounted for alternative explanations or inappropriately extrapolated an accepted premise.

Law enforcement officers and others have relied on blood and urine testing for drugs for decades, and courts routinely admit blood and urine test results under the *Frye* and *Daubert* standards when the samples are obtained by a qualified witness using appropriate methodology.

Legal Issues Pertaining to Blood and Urine Testing

Blood testing is fairly intrusive, and officers typically need a warrant to extract a person's blood. However, most criminal justice practitioners (including judges) long believed that officers could collect blood samples from DUI drivers under the exigent circumstances exception to the warrant requirement because alcohol and drugs metabolize so quickly. However, that changed in 2013.

In *Missouri v. McNeely*, the U.S. Supreme Court suggested that advances in technology, including telephonic, radio, video, and electronic warrants, have simplified and sped up the process enough to enable officers to obtain warrants in a timely manner for many DUI cases.¹¹ Thus, the court ruled that the validity of warrantless blood draws must be decided on a case-by-case basis. This, of course, makes it far more difficult for prosecutors to introduce test results in the absence of a warrant. As a result, many jurisdictions have established procedures for streamlining the warrant process. Unfortunately, even the quickest electronic systems can slow the process and result in lost evidence due to metabolism.

A large percentage of DUI arrestees, particularly those with prior arrests, refuse to provide evidential samples for testing. Although no national data exist regarding the frequency of drug test refusals, there are significant data on analogous breath alcohol test refusals. In 2011, the average breath alcohol test refusal rate in the United States was 24 percent.¹² In order to compel DUI arrestees to provide evidential samples, most states have enacted laws requiring officers to suspend or revoke the licenses of drivers who refuse to provide

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samples when officers have probable cause to believe they are impaired (these laws are commonly referred to as administrative license revocation or ALR laws). Some states have gone a step further and passed laws criminalizing such refusals. In *Birchfield v. North Dakota*, the U.S. Supreme Court ruled that states could not criminalize blood test refusals since blood testing is so intrusive (however, the court ruled that similar laws applying to breath test refusals are acceptable since breath testing is minimally intrusive).¹³

McNeely and *Birchfield* did not address urine testing. However, there is a reasonable possibility that the courts will extend the rulings to urine testing because of the privacy concerns it raises. In fact, the Minnesota Supreme Court recently did so in *State v. Thompson*.¹⁴

The Admissibility of Oral Fluid Testing Under the *Frye* and *Daubert* Standards

Oral fluid testing is relatively new when compared to blood and urine testing. However, laboratory testing of oral fluid specimens incorporates validated protocols similar to currently accepted practices for blood testing. Thus, the analyses are extremely reliable, and there is little doubt that the tests are admissible under *Frye* and *Daubert*.

On-site devices, however, are a different matter because the quality varies widely.¹⁵ Most jurisdictions use these kits as screening devices to identify drivers from whom additional biological specimens are to be collected for laboratory testing. In these cases, the results' admissibility is not a significant issue. In jurisdictions that wish to use the results for evidential purposes, officials need to carefully determine the scientific underpinnings of the devices they use and the evidence they can cite for their reliability. That said, it should be noted that a judge in California admitted on-site oral fluid test results from the Dräger DrugTest 5000.¹⁶

Legal Issues Pertaining to Oral Fluid Testing

As noted herein, the U.S. Supreme Court held that (1) there was no per se rule allowing law enforcement officers to obtain blood samples for forensic testing from DUI subjects without a warrant in *McNeely* and (2) that states cannot criminalize blood test refusals in *Birchfield*. However, the authors do not believe that the court will extend either of these cases to include oral fluid drug testing.

In *Maryland v. King*, the U.S. Supreme Court recognized that oral fluid DNA testing is far less intrusive, dangerous, and painful than blood testing.¹⁷ Accordingly, the court held that taking a cheek swab to verify a person's identity through DNA testing is

a legitimate police booking procedure and permissible under the Fourth Amendment.

Based on this precedent, it is probable that the court will treat oral fluid drug testing the same way it has treated oral fluid DNA testing and breath testing. In other words, it appears that law enforcement officers may obtain oral fluid samples for drug testing without needing to obtain a warrant, and states may pass laws criminalizing oral fluid test refusals. Assuming this to be true, oral fluid drug testing confers significant advantages for law enforcement over blood and urine drug testing. It is, however, recommended that police leaders consult with counsel to ensure any collection policies align with state or federal laws.

Current System Failures and Consequences

Unfortunately, in most U.S. jurisdictions, officers do not test impaired drivers for drugs unless they provide blood or breath samples below the legal limit for alcohol as a matter of standard operating to save the time and expense associated with the testing process. More than 1.1 million people were arrested for DUI in 2014.¹⁸ No one knows what percentage of those drivers had drugs in their system, since the states don't separate drugged drivers from alcohol-impaired drivers, and, more important, the vast majority of impaired drivers are not tested for drugs since they test above the legal limit for alcohol.¹⁹

The failure to identify and properly prosecute drivers for drug-impaired driving may have significant direct and indirect consequences. In every state, probation officers evaluate DUI offenders for alcohol and drug problems and refer them to appropriate treatment programs. Unfortunately, offenders often minimize or deny their issues; therefore, they might evade treatment that can alleviate their condition. This may explain why DUI recidivism rates are relatively high. In Norway, researchers followed 1,102 drivers who tested positive for drugs and 850 drivers with blood alcohol levels between 0.16 and 0.19 for seven years. They found that the drivers who tested between 0.16 and 0.19 recidivated at a rate of 28 percent, while those who tested positive for drugs recidivated at a rate of 57 percent (more than twice as often).²⁰ If impaired drivers are not tested for drugs, it is impossible to know which group they fall into, thus hindering proper treatment and recidivism prevention efforts.

Proposed Solutions: Oral Fluid Testing

Currently, many officers have advanced training as a Drug Recognition Expert (DRE) or in Advanced Roadside Impaired Driving Enforcement (ARIDE). However, many drug-impaired drivers continue to

evade detection at roadside contacts because their conditions are attributed to other factors, such as drowsiness and medical conditions. Roadside oral fluid testing can assist officers in developing probable cause for arrest by providing objective and scientific evidence, just as officers may use preliminary breath testers (PBTs) to confirm alcohol impairment. Further, using the devices at roadside minimizes the chances that evidence will be lost through metabolism. Officers who use on-site devices in this manner are cautioned to consider the results within the totality of the circumstances, not simply rely on the results as a stand-alone basis to make an arrest.

Several years ago, practitioners and researchers suggested testing all DUI arrestees for drugs.²¹ Screening arrestees with blood or breath alcohol levels above the legal limit with on-site oral fluid devices and collecting samples for forensic testing for those that screened positive (the "Miami Protocol") was recommended. The protocol would have two significant benefits: First, it would enhance DUI prosecutions; second, and more important, it would provide a cost-effective way to identify drug-impaired drivers, thus providing the information that probation officers and treatment professionals need to better monitor and rehabilitate probationers. In the ideal world, officers would collect samples for laboratory testing immediately after a positive screen to minimize the loss of evidence.

This solution has not been evaluated in depth; however, various parties have conducted preliminary evaluations. In 2012, the researchers partnered with the Miami-Dade County State Attorney's Office, Miami-Dade Police Department (the local sheriff's office), NMS Foundation, and the Center for Forensic Science Research and Education to evaluate the efficacy of using two on-site devices to screen drugged drivers for additional confirmatory testing. Interestingly, 39 percent of drivers with breath alcohol levels of 0.08 or higher tested positive for at least one drug category.²² None of these incidents of drug use in drivers would have been identified under the traditional standard operating procedures, since they had already tested above the threshold for alcohol impairment. The officers who participated in the evaluation liked the kits (one even referred to them as a "blessing").²³

Several other jurisdictions have conducted similar pilot projects demonstrating the efficacy and utility of oral fluid screening. For example, in California (in 2014), officers used two different brands of rapid screening devices at four sites. There were less than 1 percent false results, both positive and negative, on the devices when compared to blood or evidential oral fluid. In Vermont (in 2015), officers used both devices, as well, and achieved less than



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2 percent false results, both positive and negative, when compared to urine, blood, or evidential oral fluid. Pilot projects have also been completed in Oklahoma, Wisconsin, and Kansas—though results are not yet available—and other jurisdictions are conducting additional pilot projects.

Recommendations

On-site oral fluid testing devices are not perfect; however, they provide a viable and cost-effective way to identify drugged drivers proximate to the traffic stop. The authors recommend that officers screen all impaired drivers for drugs using on-site devices.

It is also recommended that jurisdictions consider replacing blood and urine testing with oral fluid laboratory tests for four reasons. First, as noted above, *McNeely* and *Birchfield* make it difficult for officers to obtain blood (and possibly urine) samples without a warrant. However, those same cases suggest that oral fluid testing doesn't carry those legal challenges. Second, officers can collect evidentiary samples for submission to the laboratory at roadside, which minimizes the possibility that the DUI subjects will eliminate the drugs from their system. Third, positive oral fluid test results of a parent drug indicate recent usage only, potentially correlating to the duration of drug effect, and do not indicate use from days ago. Fourth, it appears that states may criminalize oral fluid test refusals, unlike blood tests, thus increasing test compliance rates. ♦

Notes:

¹Richard Compton and Amy Berning, "Results of the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers," *Traffic Safety Facts*, July 2009. According to the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS), an estimated 23,246 people were killed in crashes where at least one driver had a blood alcohol level above 0.08; in 2014, 9,967 people died in such crashes. See, e.g., Jennifer N. Dang, *Statistical Analysis of Alcohol-Related Driving Trends, 1982–2006* (NHTSA, May 2008); and National Center for Statistics and Analysis, "Alcohol-Impaired Driving," *Traffic Safety Facts – 2014 Data* (NHTSA, December 2015).

²Note that a driver might test positive for drugs without being impaired, just as a driver might test positive for low levels of alcohol without being impaired. John H. Lacey et al., *2007 National Roadside Survey of Alcohol and Drug Use by Drivers: Alcohol Results*, NHTSA, December 2009, <http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811248.pdf> (accessed December 6, 2016).

³Amy Berning, Richard Compton, and Kathryn Wochinger, "Results of the 2013–2014 National Roadside Survey of Alcohol and Drug Use by Drivers," *Traffic Safety Facts* (NHTSA, February 2015).

⁴"Drug Involvement of Fatally Injured Drivers," *Traffic Safety Facts* (NHTSA, November 2010); Amy Berning and Dereece D. Smither, "Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes," *Traffic Safety Facts* (NHTSA, November 2014).

⁵Joanne E. Brady and Guohua Li, "Trends in Alcohol and Other Drugs Detected in Fatally Injured Drivers in the United States, 1999–2010," *American Journal of Epidemiology* 179, no. 6 (March 2014): 692–699. In a survey of Alabama drivers aged 55 or older, 68.7 percent reported current use of potentially impairing medications. See Paul A. MacLennan et al., *2009 Older Adult's Knowledge About Medications That Can Impact Driving* (Washington D.C.: AAA Foundation for Traffic Safety, 2009).

⁶Northwest High Intensity Drug Trafficking Area (NWHIDTA), *Washington State Marijuana Impact Report*, vol. 1, March 2016; Rocky Mountain HIDTA, *The Legalization of Marijuana in Colorado – The Impact*, vol. 2, August 2014; Rocky Mountain HIDTA, *The Legalization of Marijuana in Colorado – The Impact – Preliminary Report*, vol. 1, August 2013.

⁷See, e.g., Barry K. Logan, Amanda L. A. Mohr, and Stephen K. Talpins, "Detection and Prevalence of Drug Use in Arrested Drivers Using the Dräger Drug Test 5000 and Affiniton DrugWipe Oral Fluid Drug Screening Devices," *Journal of Analytical Toxicology* 38, no. 7 (2014): 444–450.

⁸NHTSA, "Drivers' Use of Marijuana in Washington State," *Traffic Tech*, Technology Transfer Series, August 2016.

⁹See, *Frye v. United States*, 293 F. 1013 (D.C. Ct. App. 1923).

¹⁰*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993).

¹¹*Missouri v. McNeely*, 569 U.S. ___, 133 S. Ct. 1552, 185 L.Ed.2d 696 (2013).

¹²Esther S. Namuswe, Heidi L. Coleman, and Amy Berning, "Breath Test Refusal Rates in the United States – 2011 Update," *Traffic Safety Facts*, Research Note (NHTSA, March 2014).

¹³*Birchfield v. North Dakota*, 579 U.S. ___, 2016 WL 3434398 (June 23, 2016).

¹⁴*State v. Thompson*, 886 N.W.2d 224 (Minn. 2016).

¹⁵See Sylvia Vanstechele et al., "Analytical Evaluation of Four On-site Oral Fluid Drug Testing Devices," *Journal of Analytical Toxicology* 36, no. 2 (March 2012): 136–140; and Frank Musshoff et al., "Performance Evaluation of On-site Oral Fluid Drug Screening Devices in Normal Police Procedure in Germany," *Forensic Science International* 238 (May 2014): 120–124.

¹⁶*State v. Salas*, Case No. BF153631A (Cal. Kern Co., November 30, 2015, oral order).

¹⁷*Maryland v. King*, 133 S. Ct. 1958, 186 L.Ed.2d 1 (2013).

¹⁸See Federal Bureau of Investigation, "Crime in the United States: 2014," table 29, Estimated Number of Arrests, United States, 2014, <https://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u-s/2014/crime-in-the-u-s-2014/tables/table-29>.

¹⁹In 1993, Miami-Dade County, Florida, prosecutors and police officers reviewed data from 25,129 DUI arrests involving the county's three largest police departments. Ninety-one percent (91 percent) of DUI arrestees provided breath samples of 0.08 or higher or refused to provide a sample. When the study was replicated in Grand Island, Nebraska, 89.81 percent of the drivers tested provided samples of 0.08 or higher or refused to provide a sample. For further information, contact Stephen K. Talpins. There is little doubt that similar data could be obtained from virtually any jurisdiction in the United States.

²⁰A. S. Christophersen et al., "Re-arrest Rates among Norwegian Drugged Drivers Compared with Drunken Drivers," *Drug and Alcohol Dependence* 66, no. 1 (March 2002): 85–92.

²¹Stephen K. Talpins et al., "The Miami-Dade Protocol: Making Drugged Driving Enforcement a Reality," *Journal of Alcoholism & Drug Dependence* 3, no. 4 (August 2015).

²²Logan, Mohr, and Talpins, "Detection and Prevalence of Drug Use in Arrested Drivers Using the Dräger Drug Test 5000 and Affiniton DrugWipe Oral Fluid Drug Screening Devices."

²³Talpins et al., "The Miami-Dade Protocol: Making Drugged Driving Enforcement a Reality."

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Mileposts

by Dennis Finkley

Drivers Who Test Positive for Drugs Have Triple the Risk of Fatal Car Crash

A recent study examined the association of drug use by drivers, in addition to the combination of drugs and alcohol, with the risk of a fatal crash occurring. The research team found that drug use is associated with a significantly increased risk of fatal crash involvement, particularly in combination with alcohol. (Fosbush L, Johnson E, Brady, and Chennu Chen, "Drug Use and Fatal Motor Vehicle Crashes: A Case-Control Study," *Accident Analysis & Prevention* 2013; 68:101-11.)

Changing Laws, Attitudes Lead to Better Outcomes for Drug Overdose

Law enforcement officers often are the medical first responders to a drug overdose, but lack certification as to when should or can be done when responding. A recent study found that a change in the way police respond to drug-related overdose emergencies could contribute to improved outcomes for the victims and the communities in which the overdoses occur. (Harris C, Gorman, Nicholas Taylor, Wilcox B, Polakowski, Sarah E, Bowers, Matthew Ray, Robert Herman, and Patricia Lane, "Law Enforcement Attitudes Toward Overdose Emergencies and Response," *Drug & Alcohol Dependence* 2014; 141:1-7.)

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License Revocation as a Tool for Combating Drugged Driving

by Stephen K. Talpins, J.D., Robert L. DuPont, M.D., Robert B. Voas, Ph.D., Erin Holmes, M.A., Kevin A. Sabet, Ph.D., and Corinne L. Shea, M.A.

Editor's Note: As more and more states contemplate decriminalizing low-level drugs, law enforcement and policymakers have expressed concerns about the effect of greater access to drugs. Recent reports indicate that more than 25% of high school seniors have either driven after using alcohol or drugs, or been the passenger with someone who has, and the rates are expected to increase. Rates among this cohort of driving after smoking marijuana have increased over the past three years. (Patrick M. O'Malley and Lloyd D. Johnston, "Driving After Drug or Alcohol Use by U.S. High School Seniors, 2001-2011," *Am. J. Publ. Health* (2013).) The article below recommends the use of a regulatory tool with which most law enforcement members are already familiar—the ALR—as a way to stem the predicted increases in these activities. The authors argue that the development of a model ALR provision for drugged drivers would serve as one valuable method of maintaining safety on the roads as other laws and regulations change the landscape of impaired driving.

Forty-one states and the District of Columbia have implemented administrative license revocation (ALR) laws that require law enforcement officers to immediately seize the driver's licenses of individuals they arrest for driving while impaired (DWI)/driving under the influence (DUI) who refuse to provide a blood, breath, or urine sample for toxicological testing or provide a sample and test at or above the 0.08% illegal BAC for alcohol. (The states use varying terminology to describe and define the crime of impaired driving. For the purposes of this article, the authors use the term DWI/DUI.) Traffic safety and alcohol policy experts generally recognize that ALR is an effective strategy to reduce alcohol-impaired driving. (T. Nelson, et al., "Efficacy and the Strength of Evidence of U.S. Alcohol Control Policies," 45(1) *Am. J. Prev. Med.* 19 (2013); National Transportation Safety Board, "Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving," Safety Report (adopted May 14, 2013).)

ALR suspensions protect the public by removing dangerous drivers from

the roadways and deter impaired driving through the provision of swift, certain, and meaningful sanctions. (A. Wagenaar and M. Modonato-Molina, "Effects of Drivers' License Suspension Policies on Alcohol-Related Crash Involvement: Long-Term Follow-Up in 46 States," 31 *Alcohol Clin. Exp. Res.* 1399 (2007).) Unfortunately, only a few states, such as Arizona and Michigan, have a similar provision for drivers who test positive for drugs. (See, e.g., J. Lacey, K. Brainard, and S. Snitow, "Drug Per Se Laws: A Review of Their Use in States," NHTSA (Jul. 2010).) But the development of a model ALR provision for drugged drivers, if it is widely adopted, is crucial to promote traffic safety.

Prioritizing Drugged Driving

Few people appreciated the dangers and significance of alcohol-impaired driving until the founding of Mothers Against Drunk Driving (MADD) in 1980. MADD humanized the crime by putting a face on its victims. Since that time, states have passed hundreds of laws and justice officials have devoted tremendous resources toward reducing the problem with pronounced and dramatic results.

Decline in Impaired Driving. The percentage of drivers with BACs at or above 0.08% has steadily declined since the 1980s. In 1973, 7.3% of weekend nighttime drivers had BACs greater than or equal to 0.08%. The percentage declined to 5.4% in 1980 and 4.3% in 1996. In 2007, only 2.2% of drivers had BACs at or above 0.08%, which represents a 70% reduction since 1973. (R. Compton and A. Berning, "Results of the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers," Traffic Safety Facts (DOT HS 811 175), Jul. 2009.) Many factors contributed to this reduction, including the adoption of per se laws, reduction of the illegal limit, increased enforcement, and the passage of ALR laws.

Not surprisingly, this change has helped save thousands of lives. (Other

solutions also have contributed to this, including safer cars, increased seatbelt usage, airbags, and better medical care.) In 1982, over 21,000 people were killed in crashes in which at least one driver had a BAC at or above 0.08%. In 2011, less than 9,900 people were killed in crashes involving a driver with a BAC of 0.08% or higher. During that same time period, the percentage of highway fatalities attributed to alcohol-impaired drivers dropped from 48% to 31%. (National Transportation Safety Board, "Reaching Zero," supra.)

Drugged Driving Overlooked in Prior Policymaking. Unfortunately, the increased understanding of alcohol-impaired driving did not result in a commensurate appreciation for drug-impaired driving. In fact, the federal government did not begin to collect data on drug-impaired driving through the National Roadside Survey until the fourth survey administration in 2007 (though researchers conducting the Monitoring the Future study have asked high school students about their drugged driving behavior). That survey revealed that 16.3% of nighttime drivers had a potentially impairing drug or drugs (including medications) in their systems. (Compton and Berning, supra.) This alarming number spurred President Obama's first drug czar to make drugged driving one of three strategic priorities in his office.

Driving is a complex task. Many medications and illicit drugs can impair a person's ability to drive safely and the results may be devastating. (See, e.g., C. Stough and R. King, "The Role of Alcohol and Other Drugs in Road Deaths and Serious Injuries," 12 *Drug Prev. Q. Issue Paper* (Mar. 2010).) In early 2010, researchers at the National Highway Traffic Safety Administration (NHTSA) reviewed data from the Fatality Analysis Reporting System (FARS) between 2005 and 2009 to determine the prevalence of drug use in fatally injured drivers for the

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first time since 1970. In 2005, 28% of the drivers with known results tested positive for a potentially impairing drug or drugs (including medications). In 2009, 33% of drivers with known results tested positive. (U.S. Department of Transportation, NHTSA, "Drug Involvement of Fatally Injured Drivers," Traffic Safety Facts (DOT HS 811 415), Nov. 2010.)

Target to Reduce Drugged Driving by 2015. Later that year, the White House Office of National Drug Control Policy (ONDCP) announced its new initiative to decrease the prevalence of drugged driving in the United States by 10% by 2015. While that goal seems unattainable given decades of inertia, it is important to note that progress is being made in recognizing the problem.

ALR generally is recognized as one of the most effective strategies to reduce alcohol-impaired driving. Researchers estimate that ALR laws reduce alcohol-related fatalities by 5% to 9%, or approximately 800 lives per year.

In 2012, NHTSA Administrator David Strickland and ONDCP Director R. Gil Kerlikowske convened a meeting of national experts to discuss the extent of the drugged driving problem and to identify potential strategies for reducing it. The committee discussed the importance of developing more sensitive, specific, and efficient means for testing drivers for the presence of drugs and implementing per se drugged driving laws. The authors and other experts discuss these solutions at length in other articles. (See, e.g., R. DuPont, R. Voas, J. Walsh, C. Shea, S. Talpins, and M. Nail, "The Need for Drugged Driving Per Se Laws: A Commentary," 13(1) Traffic Inj. Prev. 31 (2012); R. DuPont, B. Logan, C. Shea, S. Talpins, and R. Voas, "Drugged Driving Research: A White Paper," Institute for Behavior and Health, Mar. 31, 2011, available at http://www.WhiteHouseDrugPolicy.gov/publications/pdf/nda_ald_fupaper.pdf.) Following the meeting, the Institute for Behavior and Health, Inc., began developing a model ALR with NHTSA's support.

Potential Efficacy of ALR Laws

As noted above, ALR generally is recognized as one of the most effective strategies to reduce alcohol-impaired driving. Researchers estimate that ALR laws reduce alcohol-related fatalities by 5% to 9%, or approximately 800 lives per year. (National Transportation Safety Board, "Reaching Zero," supra.) Illinois, New Mexico, Maine, North Carolina, Colorado, and Utah experienced significant drops in their fatality rates after passing ALR laws. (U.S. Department of Transportation, NHTSA, "Administrative License Revocation," Traffic Safety Facts (DOT HS 810 878), Jan. 2008.)

ALR laws are successful in no small part because they provide immediate, certain, and meaningful sanctions. Swift-ness is critical because:

[a]ll else equal, consequences that occur close in time to the behavior are more reinforcing or punishing than those that occur later. . . . Timing matters—punishments experienced soon after the offending behavior are much more effective in shaping behavior than punishments that occur later. (Wagenaar and Moldonado-Molina, supra, at 1399.)

To illustrate this point, contrast the immediacy and certainty of ALR suspensions with criminal prosecutions. DWI/DUI cases often take between six months and two years to prosecute in criminal court. Research shows that the lack of celerity in the process undermines the effectiveness of post-conviction sanctions. (Id.)

Fortunately, traffic safety professionals are beginning to recognize the potential for an ALR law for drugged drivers. On July 24, 2013, Chris Murphy, then-director of the California Office of Traffic Safety, in consultation with the authors, proposed that the Governors Highway Safety Association (GHSA)

adopt a policy position on ALR for drugged drivers: "GHSA encourages States to consider expanding their existing Administrative License Revocation (ALR) laws or enacting new ALR laws for drug-impaired drivers who fail or refuse a drug test." On August 23, 2013, the resolution passed. (See GHSA, <http://www.GHSA.org/html/issues/impaireddriving/index.html>.)

Convicting Drugged Drivers

Most justice professionals believe that the conviction rate for drugged drivers is lower than it is for alcohol-impaired drivers for multiple reasons, most notably because there is no "per se" limit for drug use like there is for alcohol in most states. (Currently, 17 states have some type of per se drugged driving law.) Unfortunately, the few jurisdictions that consistently track their respective conviction rates for DWI/DUI offenders do not distinguish between alcohol- and drug-impaired drivers so there is a lack of data to support this belief. Regardless, ALR suspensions generally are not affected by what happens in criminal court. ALR thus ensures that the public receives at least some protection from drivers who evade successful prosecution.

Model ALR Law for Drugged Drivers

The Institute for Behavior and Health (IBH) model ALR law for drugged drivers currently in development requires officers who have probable cause to believe that a person drove while impaired by alcohol and/or drugs to suspend that person's license if (a) the driver refuses to be tested for drugs; or (b) tests positive for any chemical or controlled substance (regardless of amount). An officer who seizes a driver's license must issue the driver a 10-day temporary permit if the driver is otherwise eligible to drive and also give the driver a notice of suspension. The driver may request administrative review of the suspension in accordance with federal law. (The United States Supreme Court has repeatedly recognized that the suspension or revocation of a driver's license implicates a property interest and that a state cannot suspend a person's license without due process of law; see, e.g., *Bell v. Burson*, 402 U.S. 5359 (1971).)

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Broadly Covers Chemical Substances. The current draft model is written in broad terms to apply to all chemical and controlled substances. States may choose to limit their laws to controlled substances or even specific controlled substances; of course, the broader the statute, the wider the net and the greater

the potential effect of these laws. This is particularly important since people are creating synthetic drugs far more quickly than the federal government can list them. Note, however, that if the statute is extremely broad, there will be a greater demand for resources to enact and enforce it compared to a more narrowly defined statute. Policymakers are cautioned to consult with law

enforcement and other practitioners about the magnitude and characteristics of their respective jurisdiction's drugged driving problem before drafting such legislation.

Need for On-Site Testing Capabilities. The model assumes that law enforcement officers have the capability of testing drivers for drugs on-site (i.e., at roadside or at the police station during

Highlights of Model Law

Following are some prominent highlights that pertain to the DRI model law.

Driving Not a Right

Through a person has a property interest in his or her license, driving is a privilege, not a right. (See, e.g., *J. Rosenbaum et al., "Motor Vehicles,"* 64 *U.S. Motor Vehicles* 3-257; *Estacion v. Gena*, 2000 U.S. App. Lexis 30321 (4th Cir. 2000); *Sanchez v. Trinidad*, 2000 U.S. App. Lexis 16134 (7th Cir. 2004); *Roberts v. State*, 2000 U.S. App. Lexis 32253; 2000 U.S. App. Lexis 32253 (10th Cir. 2000); *John Doe No. 1 v. City of Pub. Safety*, 187 N. Supp. 3d 1242 (13th Cir. N. D. Cal. 2011); *McFarland v. Machon*, 1999 U.S. Dist. Lexis 10033 (U.S. Dist. Mass. 1999); *Plan v. Miller*, 1998 U.S. Dist. Lexis 10033 (U.S. Dist. Mass. 1998); *League of United Latin Am. Citizens v. Brackman*, 2004 U.S. Dist. Lexis 26007 (M. D. Fla. 2004); *Mathis v. Mallory*, 2005 Supp. 856 (E.C. Va. 1972).) Society has compelling interest in the promotion of traffic safety and ensuring that drivers follow the law and refrain from endangering themselves and others.

Showing Specified Limit Exceeded Not Required

There are thousands of acquiring substances available commercially or otherwise in the market. These drugs do not affect persons in consistent way the alcohol does. There is no harm done by different levels of impairment equivalent to the 0.08% standard used for alcohol. The most drugs because of the well-documented complex relationship between driving impairment and blood

levels of these drugs. (C.F. *Reichfield, B. Gaddberger, M. Gold, and R. DuPont, "The Mirage of Improbable Drug Concentration Thresholds: A Rationale for Zero Tolerance per se Driving Under the Influence of Drugs Laws,"* 2002 *J. Anal. Tox.* 303 (2002); R. DuPont, C. Reichfield, B. Gaddberger, and M. Gold, "The Synthetic Mirage of a Rationale for 'The Synthetic Mirage of the Drugged Driving,'" 24 *ANAL. TOX.* 303 (2002).) Thus, unlike the alcohol model, the model drugged driving provisions does not require showing that the driver exceeded a specified limit. (DuPont, et al., *supra* 2011, *supra* 2.) States with zero tolerance drugged driving laws may wish to adopt a more stringent ALR law than the DRI model.

On-Site Testing

The model is dependent upon the ability of law enforcement officers to test a driver for drugs at roadside or during the booking process. The authors believe that an ALR law draft first to provide the immediate solution is unlikely to have a deterrent effect.

Probable Cause Required

Police's sophisticated on-site drug test kits and laboratory testing may detect the presence of drugs in a person's blood, breath, urine, or oral fluid, after a person is no longer impaired by drugs. (DuPont, et al., *supra* 2011, *supra* 2.) Accordingly, the DRI model requires that officers have probable cause to believe that the driver's behavior was impaired by alcohol or drugs. Thus, the model does not apply to unimpaired drivers who happen to have drugs in their system at the time of testing.

Prescription Drugs

The model applies to prescription drugs, as well as other drugs, just as a person can be guilty of driving under the influence of alcohol even if their blood alcohol level is below the illegal driving limit. (See, e.g., *supra* 2011, *supra* 2.) It is generally legal to drink and drive, a person can be held accountable for driving after taking prescription medications as long as the driving officer has probable cause to arrest the driver for driving while impaired. (E. Yoon, R. DuPont, C. Slava, and S. Torgano, "Prescription Drugs, Drugged Driving, and per se Laws," 19(2) *Int'l J. Drug Policy* 216 (2003).)

Due Process

Even though driving is a privilege, drivers have an interest in keeping their licenses. Our model follows established law by allowing drivers to apply for administrative review of all suspensions quickly and easily, thus ensuring that their licenses are not taken without the assistance of due process. (See, e.g., *Machon v. Machon*, 443 U.S. 1 (1979) (an ALR suspension violates the right to due process if it is unconstitutional).)

Testing Standards

In order to encourage the development and use of effective and reliable technology, the model authorizes an appropriate state agency to establish standards for testing. For instance, a state should not use the same agency responsible for criminal breath testing or the agency responsible for public health.

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the booking process). Experience in those states such as Arizona and Michigan that have drugged driving ALR laws has shown that the delay involved in sending samples to a laboratory for analysis interferes with implementation of the ALR law. (See, e.g., Lacey, et al., *supra*.) Unfortunately, few jurisdictions provide officers with the ability to

1. Whom they have probable cause to arrest for driving while impaired; and
2. Who, depending on the state law, test above the limit or just test positive for potentially impairing drugs, or refuse to provide a sample for testing.

It provides for quasi-judicial review of all suspensions to ensure fairness and propriety. States that want to establish and implement a drugged driving ALR

pose a significant danger and should be addressed at the earliest possible opportunity. In Norway, researchers followed 1,102 drivers who were arrested in 1992 for impaired driving for a period of seven years. They determined that the re-arrest rate among drugged drivers was twice that of alcohol-impaired drivers. (A. Christophersen, S. Skurtveit, M. Grung, and J. Moreland, "Re-arrest Rates Among Norwegian Drugged Drivers Compared to Drunken Drivers," 66 *Drug and Alc. Depend.* 85 (2011).)

ALR reduces alcohol-impaired driving; logic would subsequently dictate that states have the potential to improve traffic safety by expanding their ALR systems to include drugged drivers. Because drugged drivers may be more likely to recidivate than alcohol-impaired drivers, ALR laws may have an even bigger effect among this offender population. The simple truth is that the problem will not solve itself; we need to address drugged driving in order to reduce it. Fortunately, we do not need to start from scratch or reinvent the wheel. We can, and should, replicate and apply methods that have been shown to reduce alcohol-impaired driving in an effort to address the drugged driving problem. (R. DuPont, S. Talpins, and C. Shea, "Commentary on Romano & Pollini: Stopping Drug-Impaired Driving and Alcohol-Impaired Driving—Synergy, Not Competition," 108(8) *Addiction* 1439 (2013).)

See *DRUGGED DRIVING*, next page

In a Norway study, the re-arrest rate among drugged drivers was twice that of alcohol-impaired drivers.

conduct such drug tests on account of limited resources.

The model includes numerous authorizing provisions, including the requisite provisions empowering a state agency to administer the program, establishing criteria for approving on-site drug testing devices, and training officers to use approved devices properly. The draft model is quite complex and needs to be tailored to each state's (or jurisdiction's) law before it can be implemented.

Mirrors Traditional ALR Laws

The IBH model law mirrors traditional ALR laws for drivers arrested for alcohol-impaired driving in many ways. The model provides officers with a quick and easy way to seize the licenses of drivers:

system should tailor it to their respective needs and ensure that it is compatible with current laws, including implied consent laws. (See Sidebar: Highlights of Model Law.)

The model also eliminates the seemingly anomalous situation in which drivers can lose their license administratively for driving at or above the illegal limit without any showing that they were impaired by alcohol, a legal substance, but not for driving with an illicit drug or drugs in their systems unless the state can prove impairment.

Address Drugged Driving to Reduce It

Drug-impaired driving is a burgeoning problem in the United States that must be addressed. Drugged drivers

Adolescent Substance Abuse

The Substance Abuse and Mental Health Services Administration has reported the sobering statistics of adolescent substance abuse. Among Americans ages 12 to 17, on an average day:

- 881,684 smoked marijuana
- 446,787 smoked marijuana, and
- 413,072 drank alcohol

Although the last decade has seen significant progress made in decreasing the levels of some forms of substance use among adolescents, there are still a great number of youth at

risk. Prescriptions use, on an average day, included the following:

- 3,639 drank alcohol
- 4,794 used an illicit drug
- 4,064 used marijuana
- 3,301 smoked marijuana and
- 2,151 smoked prescription pain relievers

Also sobering are the numbers of adolescents receiving treatment on an average day:

- Over 71,000 in outpatient treatment
- Over 8,000 in non-hospital residential treatment, and

• Over 1,200 in hospital inpatient treatment.

Substance Abuse and Mental Health Administration, "Substance Use by Adolescents on an Average Day Is Alarming," *SAMHSA News Release*, Aug. 20, 2013, available at <http://www.samhsa.gov/pressroom/adolescents/1308201301.pdf>. See also James Smith, "ADHD Experts Warn Best Way to Tackle Issue of Underage Drinking," *May 10, 2013*, available at <http://www.cnn.com/2013/05/10/health/adolescent-substance-use/index.html>.

DRUGGED DRIVING, from page 40

The authors recommend piloting an ALR law that applies to drugged drivers and researching its effect. All aspects of such a law should be studied, including feasibility, implementation, effect, and effectiveness.

Stephen K. Talpins serves as vice president of the Institute for Behavior and Health, Inc., a non-profit organization dedicated to reducing illegal drug use. Formerly, he served as a Miami-Dade County (FL) Assistant State Attorney, MADD National Director of Public Policy, and director of the National District Attorney Association's National Traffic Law Center.

Robert L. DuPont serves as president of the Institute for Behavior and Health, Inc., vice president of

Bessinger, DuPont & Associates, and is a clinical professor of Psychiatry at Georgetown University Medical School. He served as the first director of the National Institute on Drug Abuse and second White House Drug Chief.

Robert R. Voss has been active in traffic safety research since 1968. His research has focused on impaired driving laws and programs, including underage drinking laws, per se laws, law enforcement procedures, court procedures, sanctions, and treatment programs.

Erin Holmes is a criminologist and experienced traffic safety researcher. She is a junior fellow at the University of Florida's Drug Policy Institute.

Kevin A. Sabet serves as director at the University of Florida Drug Policy Institute and the president of Policy Solutions Lab. He served as a drug policy advisor in the Clinton, Bush, and Obama Administrations.

Caroline L. Shea serves as director of communications at the Institute for Behavior and Health, Inc.

From the Institute for Behavior and Health, Inc., the Pacific Institute for Research and Evaluation, and the University of Florida Drug Policy Institute. Address correspondence to Stephen K. Talpins at SKTalpins@aol.com.

The authors wish to thank Jeff Michael, associate administrator of the National Highway Traffic Safety Administration, for helping initiate this effort; Mark Neil, former Senior Attorney with the National Traffic Law Center; and Christopher J. Murphy, former director of the California Office of Traffic Safety, for peer-reviewing our model and this article.

We invite those interested in implementing and evaluating ALR drug laws to join the Institute for Behavior and Health's Drugged Driving Consortium by contacting Caroline Shea at Caroline.Shea@ibhinc.org. For more information about drugged driving, visit www.StopDruggedDriving.org. ■

LEGISLATIVE UPDATE, from page 32

violation of a certain prohibition on the use of a handheld telephone while operating a motor vehicle.

Act No. 371, signed by the governor on May 2, 2013, alters the definition of a motor vehicle to expand the types of vehicles for which an occupant is prohibited from consuming or possessing an alcoholic beverage in the passenger area while on a highway to include low-speed vehicles, mopeds, and motor scooters.

Michigan. Act No. 36, signed by the governor on May 21, 2013, restricts sending and receiving text messages, and using a handheld mobile phone, while operating a commercial vehicle or school bus. Act No. 23, signed by the governor on May 9, 2013, maintains the alcohol content for individuals operating a vehicle under the influence of alcoholic liquor at 0.08% without a reversion back to 0.10%.

Mississippi. Act No. 489, signed by the governor on April 11, 2013:

- Provides that persons convicted of DUI will only be allowed to operate a vehicle equipped with an ignition interlock device;
- Provides for a ignition-interlock-restricted driver's license;
- Removes hardship provisions;
- Creates an aggravated level of the offense;
- Requires mandatory probation; and
- Provides for the expunction of certain convictions under specified conditions.

Missouri. S 327, signed by the governor on July 3, 2013, authorizes the use of a court-approved private probation service by the DWI court, and makes changes concerning house arrest orders and the cost of electronic monitoring.

Montana. Act No. 153, signed by the governor on April 5, 2013, provides a legal limit for the amount of delta-9-tetrahydrocannabinol allowed to be present in a person's blood while operating a motor vehicle. Act No. 309, signed by the governor on April 26, 2013, expanded the state's 24/7 sobriety program to include other crimes in which the abuse of alcohol or dangerous drugs was a contributing factor in the commission of the crime.

Act No. 327, signed by the governor on April 29, 2013, revised alcohol enforcement laws regarding penalties within ranges based on mitigating and aggravating circumstances on the part of a licensee. Act No. 312, signed by the governor on April 26, 2013, raised the five-year look-back provision for certain alcohol- and drug-related driving offenses, and provides that all prior convictions are counted for determining the number of convictions in the case of a third or subsequent DUIs.

Nebraska. L 158, signed by the governor on April 24, 2013, made substantive changes to provisions of existing law relating to eligibility for and use of ignition interlock devices.

Nevada. Act No. 394, signed by the governor on June 3, 2013, prohibits a person from operating a motor vehicle with a dynamic display device or mobile billboard on which the images or other content change periodically unless the

motor vehicle is equipped with a display management system that allows the image or content that is displayed to be changed only when the motor vehicle is not moving or in a location where the image or content may be changed without causing undue distraction to the other vehicles. This act also prohibits moving content.

Act No. 34, signed by the governor on May 21, 2013, provides that a violation of a city or county ordinance prohibiting driving under the influence is deemed to be a violation of the state law prohibiting the same or similar conduct for all purposes other than the imposition of certain criminal penalties. Act No. 295, signed by the governor on June 1, 2013, prohibits a person from petitioning the court to seal records related to driving, operating, or controlling a vehicle or vessel while under the influence of intoxicating liquor or a controlled substance.

Act No. 87, signed by the governor on May 24, 2013, provides that the chemical solution or gas used in calibrating a blood alcohol detection device is presumed to be properly prepared and suitable for use in calibrating a device if a person who is certified to calibrate a device makes an affidavit or declaration. Act No. 373, signed by the governor on June 2, 2013, requires a court to impose a fee of \$100, in addition to any other administrative assessment, penalty, or fine imposed, if a person pleads guilty, guilty but mentally ill, or nolo contendere to, or is found guilty of, a charge of driving under the influence of intoxicating liquor or a controlled substance that is punishable as a misdemeanor.

See LEGISLATIVE UPDATE, next page

GREG WALDEN, OREGON
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Majority (202) 225-2927
Minority (202) 225-3841
July 31, 2018

Dr. Robert L. DuPont
President
Institute for Behavior and Health
6191 Executive Boulevard
Rockville, MD 20852

Dear Dr. DuPont:

Thank you for appearing before the Subcommittee on Digital Commerce and Consumer Protection on Wednesday, July 11, 2018, to testify at the hearing entitled "Examining Drug-Impaired Driving."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. To facilitate the printing of the hearing record, please respond to these questions by the close of business on Tuesday, August 14, 2018. Your responses should be mailed to Ali Fulling, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to ali.fulling@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,



Robert E. Latta
Chairman
Subcommittee on Digital Commerce
and Consumer Protection

cc: Janice D. Schakowsky, Ranking Member, Subcommittee on Digital Commerce and Consumer Protection

Attachment

Questions for the Record
Following the House Energy and Commerce Committee's
Subcommittee on Digital Commerce and Consumer Protection Hearing
"Examining Drug-Impaired Driving" July 11, 2018

Questions from Honorable Michael C. Burgess
Responses prepared by Robert L. DuPont, MD
Submitted August 6, 2018

* * * *

1. According to the Governors Highway Safety Association, the percentage of fatal accidents involving alcohol-impaired driving has decreased, while the rate of drug use among those tested has continually increased. But, we have no consistently reliable data on the combined effect of alcohol and drug use.
 - a. What studies have been done or could be done to help identify these effects?

The scientific literature on drug-impaired driving has grown significantly over the last decade, with particular focus on comparing the impairing effects on driving of various drugs, as well as the combined effects of alcohol and drugs, particularly marijuana (THC).¹ However, as noted in my testimony, no amount of new research will determine a 0.08 g/dL BAC equivalent for any drug – alone or in combination with alcohol. As a result, what the nation needs is not new research studies to identify the *effects* of combined alcohol and individual drugs (or even the most commonly used drugs) but instead new and expanded efforts to test drivers identified as impaired for the prevalence of alcohol *and* drugs.

This starts with using reliable field testing technology to test every driver arrested for impaired driving for alcohol and impairing drugs, including marijuana. It also means requiring

every driver involved in a crash which results in a fatality or significant injury who could be charged with a moving violation to provide a sample for testing for alcohol and drugs. Only with this combination of actions will we understand the full extent of the prevalence of drugs, and drugs in combination with alcohol, among impaired drivers.

¹ E.g., Hartman, R. L., et al. (2015). Cannabis effects on driving lateral control with and without alcohol. *Drug and Alcohol Dependence*, 154, 25-37; Dubois, S., et al. (2015). The combined effects of alcohol and cannabis on driving: impact on crash risk. *Forensic Science International*, 248: 94-100; Sewell, R. A., et al. (2009). The effect of cannabis compared with alcohol on driving. *American Journal on Addictions*, 118(3), 185-193.

b. What methods are available to identify drug and drug combined with alcohol use in the field?

Law enforcement officers document their observations about driving behaviors of drivers suspected of impaired driving, as well as drivers' speech, physical movements, et al. Assessing a driver for impaired driving typically includes the Standardized Field Sobriety Test (SFST) and often a preliminary breath test. Although the SFST was designed and is validated to identify alcohol-impairment, the SFST is also an effective screening tool to identify impairment among drivers who used central nervous system stimulants, central nervous system depressants, marijuana and narcotic analgesics.² As a result, these procedures provide law enforcement officers an excellent foundation for detection of drug- and combined drug-and-alcohol-impaired driving.

Officers may use a preliminary breath testing at the roadside as part of evidence collection. If an impaired driving suspect has a low BAC, officers can then use an oral fluid screening test for the most common drugs. This technology is used in many nations across the world and has been piloted in the US by police departments in several states. Analogous to the

preliminary breath test, an oral fluid screening test is non-invasive, easy to use, and is another tool for officers to collect evidence at the roadside.

When an officer has probable cause that the driver is impaired – whether or not by alcohol, a drug, or both – an arrest is made. The driver is then required to submit to a test to determine BAC. It is at this point when the collection and testing of specimens for alcohol *and* drugs must take place. If blood is collected for alcohol testing, a blood sample can be sent to a laboratory to test for drugs. Alternatively, oral fluid specimens can be collected and sent to laboratories for confirmation analysis for the presence of drugs.

Drug Recognition Experts (DREs) offer another tool in the detection of drug-impaired drivers. These specially trained officers can identify the impairing drug(s) with impressive accuracy. Although DREs are very useful in the field, there are not enough DREs on which to rely only or even use primarily for drugged driving detection.

Policy changes are needed to permit the testing of drivers for drugs using updated technology and *explicitly in addition to testing for alcohol* in all suspected impaired driving cases. This begins with permitting the use of oral fluid collection screening and confirmation testing. It also means providing incentive for law enforcement officers to test impaired driving suspects for both alcohol *and* drugs, for example, providing additional penalties to impaired drivers that are positive for multiple drugs, including alcohol.

² Porath-Waller, A. J., & Beirness, D. J. (2014). An examination of the validity of the standardized field sobriety test in detecting drug impairment using data from the Drug Evaluation and Classification program. *Traffic Injury Prevention, 15*(2), 125-131.

2. In your testimony you state that every driver found to have been impaired and positive for drugs, including marijuana, should experience the same remedies and penalties as those found to have been driving under the influence of alcohol.

a. Why do you believe this will help address the issue?

The nation has made tremendous progress in reducing alcohol-impaired driving – through strong policies backed by effective enforcement and widespread education campaigns. We can similarly reduce the problem of drug-impaired driving – but we need action *now*.

One of the most remarkable policies used to effectively reduce alcohol-impaired driving is Administrative License Revocation (ALR). Under these laws, licenses are promptly revoked for drivers arrested for impaired driving or who refuse a chemical test, effectively removing dangerous drivers from the road. Criminal prosecutions for impaired driving proceed as usual – often months or even years after the offense. Applying ALR to drug-impaired driving suspects is an important first step to reducing the drugged driving problem.³

³ Talpins, S. K., DuPont, R. L., Voas, R. B., Holmes, E., Sabet, K. A. & Shea, C. L. (2014). License revocation as a tool for combating drugged driving. *Impaired Driving Update*, 18(2).

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July 31, 2018


Ms. Jennifer Harmon
Assistant Director
Forensic Chemistry
Orange County Crime Lab
320 N. Flower Street
Santa Ana, CA 92703

Dear Ms. Harmon:

Thank you for appearing before the Subcommittee on Digital Commerce and Consumer Protection on Wednesday, July 11, 2018, to testify at the hearing entitled "Examining Drug-Impaired Driving."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. To facilitate the printing of the hearing record, please respond to these questions by the close of business on Tuesday, August 14, 2018. Your responses should be mailed to Ali Fulling, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to ali.fulling@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Robert E. Latta
Chairman
Subcommittee on Digital Commerce
and Consumer Protection

cc: Janice D. Schakowsky, Ranking Member, Subcommittee on Digital Commerce and Consumer Protection

Attachment



**ORANGE COUNTY
SHERIFF'S DEPARTMENT**

550 N. FLOWER STREET
SANTA ANA, CA 92703
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**SHERIFF-CORONER
SANDRA HUTCHENS**

OFFICE OF THE SHERIFF

August 14, 2018

The Honorable Robert E. Latta
Chairman, Subcommittee on Digital Commerce and Consumer Protection
Energy and Commerce Committee
United State House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515-6115

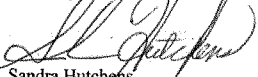
Dear Chairman Latta:

Thank you for holding the recent subcommittee hearing "Examining Drug-Impaired Driving" on July 11, 2018. Drug-impaired driving is a significant challenge facing our nation and one that deserves the attention of our national leaders.

The Orange County Sheriff's Department was pleased to be represented at the hearing by the Orange County Crime Lab's Assistant Director for Forensic Chemistry, Jennifer Harmon. Please see the attached responses developed by Ms. Harmon to address additional questions received from a member of your subcommittee. In my view, Ms. Harmon and her colleagues at our Orange County Crime Lab are on the cutting edge of compiling the research needed to develop effective policy solutions aimed at reversing the increases in drug-impaired driving.

Please do not hesitate to contact my department should you have any questions or seek further input on efforts to combat drugged driving. Thank you again for your continued focus on this important issue.

Sincerely,


Sandra Hutchens
Sheriff-Coroner

SH/rg

Mr. Robert E. Latta
 Chairman
 Subcommittee on Digital Commerce and Consumer Protection
 United State House of Representatives
 2125 Rayburn House Office Building
 Washington, DC 20515-6115

Dear Chairman Latta,

Thank you for the opportunity to appear before the Subcommittee on Digital Commerce and Consumer Protection on "Examining Drug-Impaired Driving" on July 11, 2018. I appreciate the opportunity to respond to the questions posed by the Honorable Michael C. Burgess in the letter dated July 31, 2018. Dr. Burgess asked, *"According to the Governors Highway Safety Association, the percentage of fatal accidents involving alcohol-impaired driving has decreased, while the rate of drug use among those tested has continually increased. But, we have no consistently reliable data on the combine effect of drug and alcohol use."* *"What studies have been done or could be done to help identify these effects?"* There are numerous scientific studies that demonstrate the effects that drugs and drugs in combination with alcohol have on driving. Some of the best research has come out of the European Union's DRUID project and Australia, where drugged driving impacts have been studied vigorously over the last twenty years. As an example, in a scientific literature review study by Australian authors Kelly, Darke, and Ross (2004):

"Drugs are detected commonly among those involved in motor vehicle accidents...Cannabis is generally the most common drug detected in accident-involved drivers, followed by benzodiazepines, cocaine, amphetamines and opioids. Poly-drug use is common among the accident-involved drivers. Studies of impairment indicate an undeniable association between alcohol and driving impairment. There is also evidence that cannabis and benzodiazepines increase accident risk...It is apparent that drugs in combination with alcohol, and multiple drugs, present an even greater risk" (P. 319).

Additionally, the National Highway Traffic Safety Association's (NHTSA) Roadside Survey is an excellent opportunity to track drug use trends in the United States, especially in terms of preventative health and education strategies and effectiveness, as well as with drug use perceptions and patterns. As seen through our testing in Orange County, testing of every arrested DUI driver regardless of the blood alcohol concentration and traffic safety related fatality, drug use is complex and typically in combination with more than one substance and at concentrations that may be toxic too much of the population. Scientifically controlled evaluation of real-world drug use patterns and combinations is difficult. The best data will come from collecting epidemiological data.

The only way to collect that data is to improve and increase testing, both by laboratories testing the samples and by law enforcement who are evaluating possible drug impaired drivers at roadside. The Honorable Michael Burgess addresses this in his follow up question, *"What methods are available to identify drug and drug combine with alcohol use in the field?"*

Current methods available to identify these drivers in the field include the Standardize Field Sobriety Tests (SFSTs) and additional training with Advanced Roadside Impaired Driving Enforcement (ARIDE) and Drug Recognition Expert (DRE). The International Association of Chiefs of Police (IACP) administers these programs and is best suited to provide more extensive detail about the training. That being said, these

training programs have educated thousands of law enforcement officers to effectively determine drug-impaired and poly-drug/alcohol impaired drivers for more than 30 years. This is evident from the rate of positives received by crime laboratories. Our laboratory alone has more than a 96% positive rate for drugs, alcohol, or both in its tested apprehended DUI drivers. Additionally, in a 2016 study by authors Watson and Mann, "Combined observations on psychophysical and eye exams produced the best indicators of cannabis impairment" (p. 150). There is also emerging technology in roadside detection with marijuana breath testing and saliva testing, however, these techniques have limitations; most important to note is the limited scope of testing. Finally, there is additional legislated scientific research currently taking place by the University of California at San Diego (UCSD) to aid in validation and development of current and additional tests in conjunction with the DRE program.

The success of the law enforcement programs, SFST, ARIDE, DRE, are dependent upon comprehensive forensic toxicological testing. As noted by Dr. Burgess, *I testified that it is critical for all laboratories to conduct comprehensive toxicology testing.* Toxicology testing is the last step of the DRE program. Officers cannot certify or recertify without it. If law enforcement opines that someone is under the influence but has no mechanism to identify the actual drug causing the observed impairment, it makes the program far less effective. Laboratories must have the needed resources to test for, minimally, the most prevalent drugs in their jurisdictions.

Traffic safety testing is not a priority in many crime laboratories or jurisdictions as many of the cases are misdemeanor crimes and testing is limited to alcohol. Crime laboratories must compete for funding for all areas of forensic science including crime scene investigation, firearms testing, toxicology, latent prints, DNA, and narcotics identification. Currently, DNA is the only area of forensics that has dedicated moneys that jurisdictions are not directly competing for with not only other law enforcement agencies but within their own programs.

Funding chemical testing ensures evidence-based outcomes for law enforcement and support for drug-impaired training. It provides the much needed data for the federal Fatal Accident Reporting System (FARS). It additionally offers a comprehensive picture of drug use trends which can contribute to a better understanding of the true prevalence of the problem in the U.S. Multiple organizations including the Governors Highway Safety Association (2016, P. 7), the Government Accountability Office (2015, P. 12) and the National Safety Council (Logan, et al., 2017, P. 2) have supported that drug-impaired driving is under reported as many traffic safety related samples are not tested or the testing is limited. By improving chemical testing traffic safety policy, prevention, education and treatment programs to reduce recidivism of the drug-impaired can be best developed.

Thank you again for the opportunity to testify and provide response.

Jennifer Harmon
Assistant Director – Forensic Chemistry
Orange County Crime Laboratory
Orange County Sheriff-Coroner Department

References:

- Government Accountability Office. (2015). *Drug Impaired Driving: Additional Support Needed for Public Awareness Initiatives* (GAO Highlights of 15-293). Washington, DC.
- Hedlund, J. (2017, April). Drug-Impaired Driving: A Guide for States. *Governor's Highway Safety Association (GHSA)*. p. 1-56.
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- Logan, B. K., D'Orazio, A. L., Mohr, A. L. A., Limoges, J. F., Miles, A. K., Scarneo, C. E., Kerrigan, S., Liddicoat, L. J., Scott, K. S., and Huestis, M. A. (2017). Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities—2017 Update. *Journal of Analytical Toxicology*, 1-6.
- Watson, T. M. and Mann, R. E. (2016). International approaches to driving under the influence of cannabis: A review of evidence on impact. *Drug and Alcohol Dependence*, 169, 148-155.

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July 31, 2018

Ms. Erin Holmes
Director
Traffic Safety Programs and Technical Writer
Responsibility.org
2345 Crystal Drive, Suite 710
Arlington, VA 22202

Dear Ms. Holmes:

Thank you for appearing before the Subcommittee on Digital Commerce and Consumer Protection on Wednesday, July 11, 2018, to testify at the hearing entitled "Examining Drug-Impaired Driving."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. To facilitate the printing of the hearing record, please respond to these questions by the close of business on Tuesday, August 14, 2018. Your responses should be mailed to Ali Fulling, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to ali.fulling@mail.house.gov.

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Sincerely,



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and Consumer Protection

cc: Janice D. Schakowsky, Ranking Member, Subcommittee on Digital Commerce and Consumer Protection

Attachment



FOUNDATION FOR
ADVANCING ALCOHOL
RESPONSIBILITY

**Subcommittee on Digital Commerce and Consumer Protection
of the
House Energy and Commerce Committee**

**Hearing on
"Examining Drug-Impaired Driving"
(July 11, 2018)**

Response to additional questions submitted for the record by the Honorable Michael Burgess

Chairman Latta, again thank you for the opportunity to testify before the subcommittee on this important public safety issue. In 2016, the most recent year for which data are available, the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) found that drugs were present in 43.6% of fatally-injured drivers with a known drug test result. We applaud your committee for taking a leadership role in identifying solutions and actions that can be taken to save lives on the nation's roadways.

Also, thank you to Representative Michael Burgess for requesting additional information on strategies that can be employed to better identify drug-impaired drivers as well as how best to translate lessons learned from decades of combatting alcohol-impaired driving. Below are my responses to Rep. Burgess' questions for the official hearing record.

1. According to the Governors Highway Safety Association, the percentage of fatal accidents involving alcohol-impaired driving has decreased, while the rate of drug use among those tested has continually increased. But we have no consistently reliable data on the combined effect of drug and alcohol use.
 - a. What studies have been done or could be done to help identify these effects?

Answer: A number of studies have been done domestically and abroad that examine the combined effect that polysubstance use can have on either impairment or crash risk. In recent years, several studies have focused on the combined effects of alcohol and marijuana as this is the most common combination found in both fatally-injured and arrested drivers. Several citations are provided below.

Numerous studies have been conducted that identify the combination of multiple drugs or drugs and alcohol as greatly increasing crash risk. The results from the comprehensive DRUID study are included in the chart below. NHTSA also recently conducted a crash risk study (commonly referred to as the *Virginia Beach Study*) but there were several important limitations acknowledged by the authors.

TABLE 3. CRASH RISK ASSOCIATED WITH DRUG USE IN EUROPEAN STUDIES

Risk level	Relative risk	Drug category
Slightly increased risk	1-3	marijuana
Medium increased risk	2-10	benzodiazepines cocaine opioid
Highly increased risk	5-30	amphetamines multiple drugs
Extremely increased risk	20-200	alcohol together with drugs

Schulze et al., 2012; Griffiths, 2014

*(Image source: Hedlund, J. (2017). *Drug-Impaired Driving: A Guide for States*. Washington, DC: Governors Highway Safety Association).

With respect to impairment, it is important to be aware that the combination of various substances can greatly increase their effect. Recent simulator research conducted by the National Institute on Drug Abuse (NIDA) with support from NHTSA and the White House Office of National Drug Control Policy (ONDCP) found that the combination of alcohol and marijuana produced an additive effect (i.e., the combination of the substances produced greater impairment than either on its own) while other studies have found a multiplicative effect (i.e., $1+1=3$).

Additional research is needed to add to the existing body of scientific literature. Future experimental studies using dosed subjects and the simulator at the University of Iowa as well as crash risk studies that improve upon the Virginia Beach study methodology are recommended.

Griffiths, P. (2014). An Overview of Drug Impaired Driving in the EU. 2nd International Symposium on Drugs and Driving. Wellington, NZ: New Zealand Drug Foundation. <http://www.drugfoundation.org.nz/drugdriving2014/presentations>

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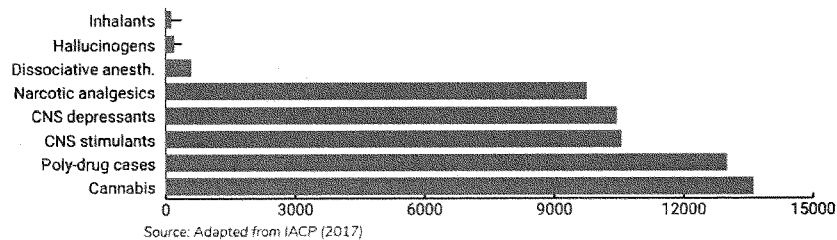
- b. What methods are available to identify drug and drug combined with alcohol use in the field?

Answer: Well-trained law enforcement officers are the best line of defense when it comes to identifying and removing impaired drivers (whether drunk, drugged, or poly-users) from the road. A variety of different detection strategies are available to law enforcement to identify drug-impaired drivers. These methods include roadside testing, sobriety checkpoints, saturation patrols, and specialized training

programs such as the Drug Evaluation and Classification (DEC) program and Advanced Roadside Impaired Driving Enforcement (ARIDE). These programs facilitate the detection of drug-impaired drivers by providing officers with training necessary to complete a behavioral assessment of impairment. These programs go beyond the Standardized Field Sobriety Test (SFST) training that most officers receive and provide them with knowledge and training that allows them to identify and articulate the signs and symptoms of drug impairment.

Officers who complete the DEC program are required to go through three phases of training totaling more than 150 hours along with field certification before they become Drug Recognition Experts (DREs). These officers use a standardized protocol that allows them to determine whether a suspect is impaired, if that impairment is caused by drugs or can be attributed to a medical condition, and the category of drug(s) that are the cause of the impairment. In rendering their opinion, DREs can make a finding of poly-drug use. This category happened to be the second most common opinion in 2016 evaluations.

2016 DRE enforcement evaluation opinions, by drug category



*(Image source: Hedlund, J. (2018). *Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States*. Washington, DC: Governors Highway Safety Association).

Unfortunately, due to the level of commitment required to complete the DEC training and the cost to train officers, it is not always a viable option for agencies that have limited staff and resources. Therefore, in an effort to increase education and training among patrol officers more broadly, the ARIDE program was created. ARIDE is designed to bridge the gap between SFST training and the DEC program in that it is 16 hours of training that educates officers on how to identify the signs and symptoms of drug impairment. The good news is that an increasing number of officers are being trained in ARIDE and certified as DREs each year; however, more resources and appropriations are needed to facilitate the training of additional officers, particularly in rural areas of the country.

In addition to specialized training, officers also rely on the collection of chemical tests to build a strong impaired driving case. For alcohol-impaired driving, this is relatively simple due to the availability of breath tests. In drug-impaired driving cases, officers typically must seek a warrant to obtain a blood draw. With many jurisdictions struggling to address increases in drug and polysubstance use and knowing that many drugs rapidly metabolize within the body, there is a pressing need to implement processes that allow officers to obtain chemical samples as efficiently as possible. Luckily, law enforcement agencies across the country have begun to implement systems that will facilitate an

expedited electronic warrant submission and approval process. The greatest advantage of e-warrant systems is that they provide a mechanism for officers to obtain accurate toxicology results quickly. These systems can significantly streamline the arrest process and reduce the amount of time that officers are off the street, and reduce the amount of time between the request, approval, and execution of the warrant. The automated nature of the content of most e-warrants also results in fewer mistakes and errors in the request, which in turn means fewer warrants are rejected by judges. Additional funding for the implementation of these systems would go a long way towards preserving chemical evidence in drug-impaired driving cases.

Finally, new tools and technology for law enforcement are on the horizon. While some are still in development, others are being piloted throughout the country and being utilized internationally. The most promising technology that can be used to detect drugs at roadside is oral fluid testing. This technology tests for the most commonly used categories of drugs. Oral fluid technology offers many advantages over blood and urine testing as it is quick and easy to use, minimally invasive, has a short detection window (i.e., positive findings are indicative of recent as opposed to historical use), and provides a sample proximate to the time of driving. It is recommended that the results from the device be utilized within the context of a broader impaired driving investigation similar to preliminary breath tests (e.g., observations while vehicle is in motion and during the traffic stop, clues on the standardized field sobriety tests, etc.).

Perhaps the greatest potential benefit of oral fluid technology is that it will allow officers to test drivers who are above the .08 illegal blood alcohol limit for drugs if they suspect that the individual has consumed substances other than alcohol; this is not standard procedure at present and, as a result, there are implications when it comes to making assessment, supervision, and treatment decisions later in the criminal justice process. Funding for research to examine the feasibility of incorporating on-site oral fluid devices in criminal justice processes and monitoring of new and emerging technologies such as marijuana breathalyzers and transdermal devices is recommended.

2. We have made great strides in addressing alcohol-impaired driving.

- a. What lessons have we learned from those efforts that we can apply to drug-impaired driving? In particular, I'm interested in hearing what can be done to address prescription-based drug-impaired driving with the work that I have led as chairman of the Health subcommittee.

Answer: Tremendous progress has been made in reducing alcohol-impaired driving fatalities as the number has been reduced by 50% since 1982. While there is a great deal of work left to be done, there are a number of strategies and lessons learned that can be employed to address the more complex problem of drug-impaired driving. By emulating the approaches taken to reduce alcohol-impaired driving, progress in eliminating drug and polysubstance-impaired driving can hopefully be achieved in a shorter timeframe. This model includes:

- Passage of laws to target multiple facets of the problem,
- Sustained and high visibility enforcement efforts,

- Identifying the countermeasures that work; evaluation and strengthening of programs,
- Targeting high-risk offenders,
- Assessment and treatment,
- Public education and awareness, and,
- Changing societal norms.

While many of the policies and countermeasures that are effective in addressing DUI such as per se legal limits, ignition interlocks, and emerging technologies like the Driver Alcohol Detection System for Safety (DADSS) will not necessarily be viable options to reduce the occurrence of driving under the influence of drugs, there are laws and approaches that can be translated such as zero tolerance laws for individuals under the age of 21; administrative license suspension/revocation (ALS/ALR); mandatory screening, assessment and (if indicated) treatment; DWI courts; offender monitoring programs; and, enhanced penalties for polysubstance users (similar to enhanced penalties for high-BAC drivers). In addition to these policies, the allocation of additional highway safety funds to improve the quality of state labs would be beneficial. States should be afforded the flexibility to use said funds to hire additional lab staff and purchase lab instrumentation. Improving the quality and abilities of laboratories has the added benefit of reducing backlog in DUI/DUID cases which is a common challenge encountered in many states.

With respect to addressing prescription drug use and driving, public education and awareness is of utmost importance. Many individuals may not realize that over-the-counter medications or medications legally prescribed by their doctor can impair their ability to drive safely. For this reason, several preventative steps can be taken:

- While prescription drugs contain labels that warn against operating heavy machinery and many physicians and pharmacists emphasize this information with patients, more can be done. Congress should encourage federal agencies including NHTSA, ONDCP, and the Federal Drug Administration (FDA) to explore opportunities to increase education about the dangers of driving after using prescription drugs. Public health officials should be encouraged to have explicit conversations with their patients.
- Labeling on prescriptions that have impairing side effects should be larger and note that heavy machinery includes motor vehicles.
- State-level and national campaigns are needed to educate patients and make them aware that they can be arrested for impaired driving even if they are legally prescribed the substance that impairs them. Some examples of prescription drug-impaired driving campaigns include California's *DUI Doesn't Just Mean Booze* and Wisconsin's *Dose of Reality*. NHTSA also launched the *If You Feel Different, You Drive Different – Drive High, Get A DUI* campaign to educate the public that they should not get behind the wheel if they feel differently after taking a drug. Congress is encouraged to monitor NHTSA's progress and provide appropriations to expand these public outreach efforts if deemed effective.

Should you require additional information or if Responsibility.org can further serve as a resource, please do not hesitate to reach out. Thank you again for your leadership and commitment to saving lives on our nation's roadways.

